

## JAWAPAN

KERTAS SOALAN  
PEPERIKSAAN SEBENAR  
SPM 2021-2025

## MATEMATIK

Dwibahasa

## SIJIL PELAJARAN MALAYSIA 2021

## KERTAS 1

1 D

A: 1 050 kilometer / kilometre =  $1.05 \times 10^3$  kilometer / kilometre → Salah / IncorrectB: 0.75 teraliter / teralitre =  $7.5 \times 10^{-1}$  teraliter / teralitre → Salah / IncorrectC: 0.089 fentometer / fentometre =  $8.9 \times 10^{-2}$  fentometer / fentometre → Salah / IncorrectD: 2 160 gigabait / gigabyte =  $2.16 \times 10^3$  gigabait / gigabyte → Betul / Correct

2 C

A, B dan D menerangkan kelebihan kad kredit.

A, B and D explains the advantages of credit card.

3 D

 $P = \text{RM}3\ 000$  $R = 5\%$  atau 0.05 setahun

5% or 0.05 per year

 $n = 2$  $t = 5$ 

$$MV = P \left( 1 + \frac{r}{n} \right)^{nt}$$

$$= 3000 \left( 1 + \frac{0.05}{2} \right)^{2(5)}$$

$$= \text{RM}3\ 840.25$$

4 D

Aset → Menjana pendapatan

Asset → Generate income

Liabiliti → Tidak menjana pendapatan

Liability → Does not generate income

5 D

A: Cukai jalan → Dikenakan cukai kepada pengguna jalan raya yang memiliki kenderaan termasuk motosikal dan kereta.

*Road tax → Taxed to road users who own vehicles including motorcycles and cars.*

B: Cukai pintu → Dikenakan cukai kepada semua pegangan atau harta tanah.

*Property assessment tax → Taxed to all holdings or real estate.*

C: Cukai pendapatan → Dikenakan cukai atas pendapatan.

*Income tax → Taxed on income.*

D: Cukai jualan dan perkhidmatan → Dikenakan cukai terhadap pengguna yang menggunakan perkhidmatan bercukai tertentu seperti perkhidmatan hotel, insurans dan takaful, penyedia makanan dan minuman, telekomunikasi, kad kredit dan sebagainya.

*Sale and service tax → Taxed on consumers who use certain taxable services such as hotel services, insurance and takaful, food and beverage providers, telecommunications, credit cards and etc.*

6 B

A: Graf berakhir bukan pada jarak 0 km seperti yang ditunjukkan dalam Jadual 1.

*The graph ends not at a distance of 0 km as shown in Table 1.*

B: Menepati data yang ditunjukkan dalam Jadual 1.

*Adhere to the data shown in Table 1.*

C: Jarak semakin jauh (meningkat), yang mana tidak sama dengan data dalam Jadual 1 yang menunjukkan jarak semakin dekat (menurun).

*The distance is getting further (increasing), which is not the same as the data in Table 1 that shows the distance is getting closer (decreasing).*

D: Graf bermula pada jarak 0 km, yang mana tidak sama dengan data dalam Jadual 1 yang bermula pada jarak 3.2 km.

*The graph starts at a distance of 0 km, which is not the same as the data in Table 1 that starts at a distance of 3.2 km.*

7 C

Graf laju-masa / *Speed-time graph:*

Jarak = Luas bawah graf

*Distance = Area under the graph*

$$(8 - 2) \times u + \frac{1}{2} \times (10 + u) \times 2 = 220$$

$$6u + 10 + u = 220$$

$$7u = 220 - 10$$

$$u = 30$$

8 B

$R(R, 0)$

$S(S, 0)$

$$f(x) = x^2 - 7x - 8$$

$$0 = x^2 - 7x - 8$$

$$0 = (x + 1)(x - 8)$$

$$x + 1 = 0$$

$$x = -1$$

$$x - 8 = 0$$

$$x = 8$$

Titik R berada pada bahagian negatif pada paksi-x, maka:

*Point R is on the negative side of the x-axis, then:*

$R(-1, 0)$

Titik S berada pada bahagian positif pada paksi-x, maka:

*Point S is on the positive side of the x-axis, then:*

$S(8, 0)$

9 B

$$p \propto \frac{1}{\sqrt{q}}$$

$$p = \frac{k}{\sqrt{q}}$$

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

$$k = 4 \times 5$$

$$= 20$$

$$p = \frac{20}{\sqrt{q}}$$

10 B

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \frac{3 - 0}{0 - (-6)}$$

$$= \frac{3}{6}$$

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

11 D

Faktor skala / Scale factor

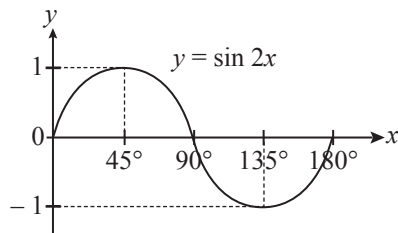
$$= \frac{\text{Imej / Image}}{\text{Objek / Object}}$$

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

$$= 3$$

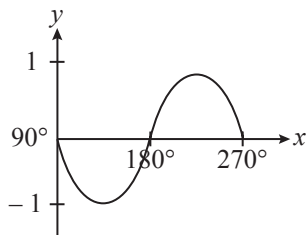
12 C

Graf / Graph  $\sin 2x$ :



Maka, graf  $y = \sin 2x$  bagi  $90^\circ \leq x \leq 270^\circ$  adalah

Hence, the graph represents  $y = \sin 2x$  for  $90^\circ \leq x \leq 270^\circ$  is



**13 B**

Lokus  $x$  bergerak 6 cm dari titik  $R =$  titik **A** dan **B**

*Locus  $x$  moves 6 cm from point  $R =$  point **A** and **B***

Lokus  $y$  bergerak jarak sama dari garis  $PQ$  dan  $SR =$  titik **B** dan **D**

*Locus  $y$  moves such that it is equidistance from line  $PQ$  and  $SR =$  point **B** and **D***

Titik yang memenuhi kedua-dua syarat ialah titik **B**.

*The point that meets both conditions is point **B**.*

**14 C**

$$VPQ = VQR = VUR = 18$$

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

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

$$k^2 = \frac{\text{luas imej / area of image}}{\text{luas objek / area of object}}$$

$$\left(\frac{1}{2}\right)^2 = \frac{UST}{18}$$

$$UST = 4.5$$

$$\begin{aligned}\text{Jumlah luas / Total area} &= 3(18) + 4.5 \\ &= 58.5 \text{ cm}^2\end{aligned}$$

**15 B**

$$\begin{aligned}PS + RQ &= 100 + 150 \\ &= 250\end{aligned}$$

**16 B**

$$\xi = \{10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20\}$$

$$P \cup Q = \{12, 14, 15, 16, 17, 18\}$$

$$(P \cup Q)' = \{10, 11, 13, 19, 20\}$$

**17 B**

Hujah deduktif:

*Deductive argument:*

Premis 1: Jika  $P$ , maka  $Q$ .

*Premise 1: If  $P$ , then  $Q$ .*

Premis 2: Bukan  $Q$  adalah benar.

*Premise 2: Not  $Q$  is true.*

Kesimpulan: Bukan  $P$  adalah benar.

*Conclusion: Not  $P$  is true.*

Premis1: Jika  $m \div 8 = -2$ , maka  $m = -6$ .

*Premise 1: If  $m \div 8 = -2$ , then  $m = -6$ .*

Premis 2 :  $m = 16$

*Premise 2*

Kesimpulan:  $m \div 8 \neq -2$

*Conclusion:  $m \div 8 \neq -2$*

18 C

A: Julat / Range 23 hingga / to 27 = 5 kali / times

B: Julat / Range 38 hingga / to 38 = 6 kali / times

C: Julat / Range 41 hingga / to 49 = 8 kali / times

D: Julat / Range 50 hingga / to 55 = 5 kali / times

19 B

$$\begin{aligned}\text{Min / Mean} &= \frac{\sum fx}{\sum f} \\ &= \frac{(10.5 \times 2) + (30.5 \times 7) + (50.5 \times 5) + (70.5 \times 11) + (90.5 \times 5)}{2 + 7 + 5 + 11 + 5} \\ &= 57.17\end{aligned}$$

20 B

Kimia / Chemistry:

Lulus / Pass = 0.4

Gagal / Fail = 0.6

Matematik / Mathematics:

Lulus / Pass = 0.7

Gagal / Fail = 0.3

$$0.7 \times 0.4 = 0.28$$

21 A

$$\begin{aligned}\frac{\sqrt{p^{-4} \times q^4}}{p \times p \times q \times q} &= \frac{(p^{-4} \times q^4)^{\frac{1}{2}}}{p^2 \times q^2} \\ &= \frac{p^{-2} \times q^2}{p^2 \times q^2} \\ &= p^{-2-2} q^{2-2} \\ &= p^{-4} q^0 \\ &= p^{-4}\end{aligned}$$

22 A

$$\sqrt{(3.36 \times 10^3)^2 - (3.24 \times 10^3)^2} = 889.9 \text{ cm}$$

$$\begin{aligned}\text{Luas / Area} &= \frac{1}{2} \times (3.24 \times 10^3) \text{ cm} \times 889.9 \text{ cm} \\ &= 1.44 \times 10^6 \text{ cm}^2\end{aligned}$$

23 D

$$m = \frac{\text{mencancang / vertical}}{\text{mengufuk / horizontal}}$$

$$\frac{4}{3} = \frac{2.1}{x}$$

$$x = 1.6$$

$$\begin{aligned}\text{Jarak PR / Distance of PR} &= 4.8 - 1.6 \\ &= 3.2 \text{ cm}\end{aligned}$$

24 C

$$x^2 - 4x = \frac{4}{3} \left( 2 - \frac{x}{2} \right)$$

$$3x^2 - 12x = 8 - 2x$$

$$3x^2 - 12x + 2x - 8 = 0$$

$$3x^2 - 10x - 8 = 0$$

$$(3x + 2)(x - 4) = 0$$

$$x = -\frac{2}{3}, \quad x = 4$$

25 B

Graf menunjukkan hubungan  $\geq$ . Maka, **B** dan **D** diambil kira.

*The graph shows the relationship of  $\geq$ . Then, **B** and **D** are taken into account.*

$$P(-3, -1)$$

$$Q(3, 8)$$

$$\mathbf{B}: 2y \geq 3x + 7$$

Gantikan koordinat titik  $P$  / *Substitute the coordinates of  $P$ :*

$$2(-1) \geq 3(-3) + 7$$

$$-2 \geq -2(\text{Benar / True})$$

Gantikan koordinat titik  $Q$  / *Substitute the coordinates of  $Q$ :*

$$2(8) \geq 3(3) + 7$$

$$16 \geq 16(\text{Benar / True})$$

26 C

$$pq + 1 = q^2 + p$$

$$pq - p = q^2 - 1$$

$$p(q - 1) = q^2 - 1$$

$$p = \frac{q^2 - 1}{q - 1}$$

$$p = \frac{(q - 1)(q + 1)}{q - 1}$$

$$= q + 1$$

27 B

$$h \propto \frac{1}{t}$$

$$t = 40$$

$$h = 1\,250$$

$$h = \frac{k}{t}$$

$$1\,250 = \frac{k}{40}$$

$$k = 50\,000$$

$$h = \frac{50\,000}{t}$$

$$h = \frac{50\,000}{100}$$

$$= 500 \text{ cm}$$

28 D

$$\begin{pmatrix} 3 & 2 \\ -5 & 4 \end{pmatrix} \begin{pmatrix} 1 \\ -x \end{pmatrix} = \begin{pmatrix} -x \\ -17 \end{pmatrix}$$

$$\begin{aligned} (3)(1) + 2(-x) &= -x \\ 3 - 2x + x &= 0 \\ -x &= -3 \\ x &= 3 \end{aligned}$$

$$\begin{aligned} (-5)(1) + (4)(-x) &= -17 \\ -5 - 4x &= -17 \\ x &= \frac{-17 + 5}{-4} \\ x &= 3 \end{aligned}$$

29 D

$$\begin{aligned} x &= \frac{180^\circ - 70^\circ}{2} \\ &= 55^\circ \\ y &= 180^\circ - 65^\circ - 55^\circ \\ &= 60^\circ \end{aligned}$$

30 C

$$\begin{aligned} 1 : m \\ P &= 1\,386 \\ Q &= 154 \end{aligned}$$

$$\begin{aligned} P: \frac{22}{7} \times r^2 &= 1\,386 \\ r &= 21 \end{aligned}$$

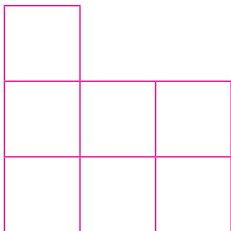
$$\begin{aligned} Q: \frac{22}{7} \times r^2 &= 154 \\ r &= 7 \end{aligned}$$

$$\begin{aligned} \text{Imej / Image : Objek / Object} \\ &= 7 : 21 \\ &= \frac{7}{7} : \frac{21}{7} \\ &= 1 : 3 \end{aligned}$$

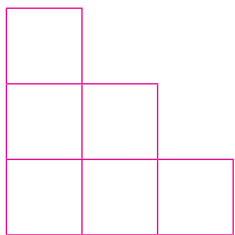
$$\therefore m = 3$$

31 D

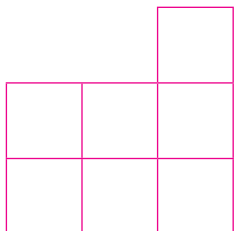
A:



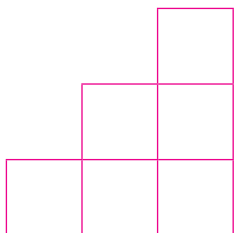
**B:**



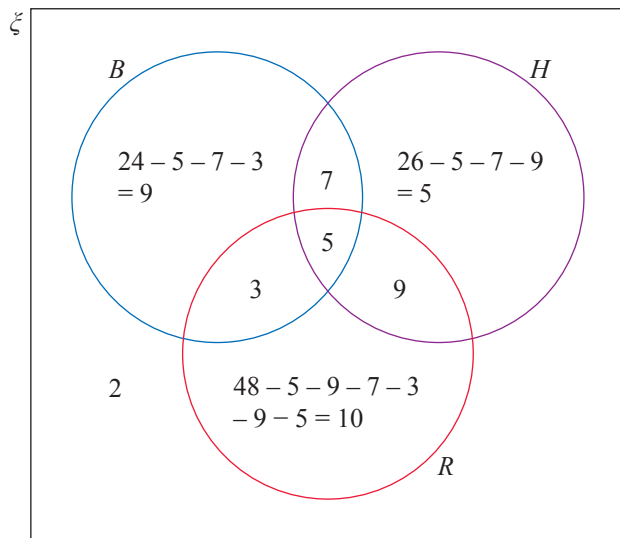
**C:**



**D:**



**32 D**



33 A

$$MM : MT = 2 : 1$$

$$60 - 8 - 11 - 10 - 10 = 21$$

$$3 \text{ bahagian / parts} = 21$$

$$1 \text{ bahagian / part} = \frac{21}{3}$$
$$= 7$$

$$MM = 2 \times 7 = 14 \text{ orang murid / students}$$

$$MT = 1 \times 7 = 7 \text{ orang murid / students}$$

$$\text{Jumlah kutipan yuran / Total fee collection}$$

$$= (8 \times 3) + (11 \times 5) + (10 \times 5) + (10 \times 5) + (14 \times 4) + (7 \times 6)$$
$$= 277$$

34 C

$$\{GE, GT, EG, ET, TE, TG\}$$

35 A

$$\text{Harga jualan / Selling price} = \text{RM}550\,000$$

$$t = 5$$

$$\text{Wang pendahuluan / Deposit} = \frac{10}{100} \times 550\,000$$
$$= 55\,000$$

$$\text{Jumlah pendapatan / Total income} = \text{RM}7\,200$$

$$\text{Perbelanjaan / Expenses} = \text{RM}4\,000$$

$$7\,200 - 4\,000 - \frac{55\,000}{5 \times 12} = \text{RM}2\,283.33$$

36 (Tidak ada dalam pilihan jawapan / None in the answer choices)

$$(17 \times 100) \times (4 \times 100) = 680\,000$$

$$680\,000 - 2(200 \times 200) - (100 \times 300) = 570\,000$$

$$\frac{570\,000}{28\,000} = 20.36$$

$$\therefore 21 \text{ tin cat / can of paint}$$

37 B

$$\begin{pmatrix} 5 & -2 \\ -7 & 3 \end{pmatrix} \begin{pmatrix} 2 \\ 3 \end{pmatrix} = \frac{1}{2x} \begin{pmatrix} 16 \\ -20 \end{pmatrix}$$

$$5(2) + (-2)(3) = \frac{16}{2x}$$

$$10 - 6 = \frac{16}{2x}$$

$$2x = 4$$

$$x = 2$$

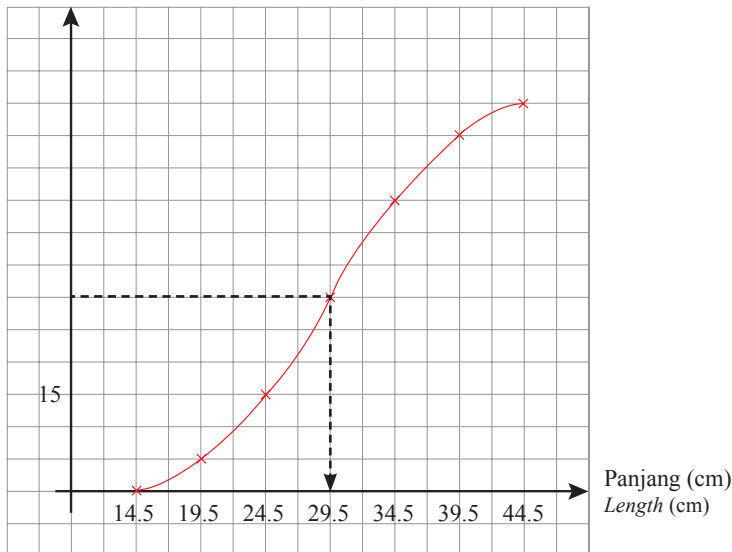
38 C

$$\frac{25}{100} \times x = 15$$

$$x = 60$$

$$\frac{1}{2} \times 60 = 30$$

Kekerapan longgokan  
Cumulative frequency



Median panjang / Median of length = 29.5

39 D

$$\begin{aligned} \text{Isnin / Monday : } &100110_2 \\ &= (1 \times 2^5) + (1 \times 2^2) + (1 \times 2) \\ &= 38 \text{ pengunjung / visitors} \end{aligned}$$

Selasa / Tuesday: 55 pengunjung / visitors

$$\begin{aligned} \text{Rabu / Wednesday: } &2201_3 \\ &= (2 \times 3^3) + (2 \times 3^2) + (1 \times 3^0) \\ &= 73 \text{ pengunjung / visitors} \end{aligned}$$

$$\begin{aligned} \text{Khamis / Thursday: } &124_8 \\ &= (1 \times 8^2) + (2 \times 8^1) + (4 \times 8^0) \\ &= 84 \text{ pengunjung / visitors} \end{aligned}$$

$$\begin{aligned} \text{Purata / Mean} &= \frac{38 + 55 + 73 + 84}{4} \\ &= 62.5 \text{ pengunjung / visitors} \end{aligned}$$

40 B

- I: Kelebihan menggunakan kad kredit  
*The advantages of using credit card*  
 II: Kelemahan menggunakan kad kredit  
*The disadvantages of using credit card*  
 III: Kelemahan menggunakan kad kredit  
*The disadvantages of using credit card*  
 IV: Kelebihan menggunakan kad kredit  
*The advantages of using credit card*

∴ I dan / and IV

## KERTAS 2

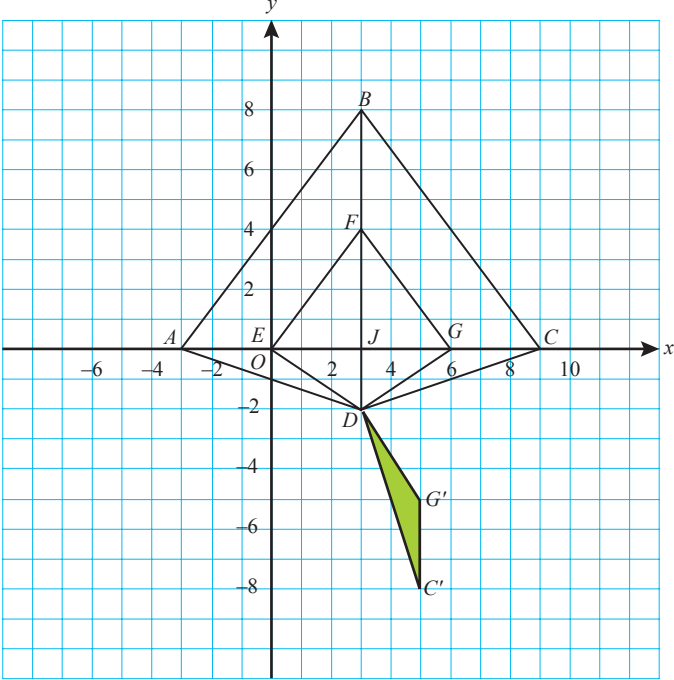
### Bahagian A

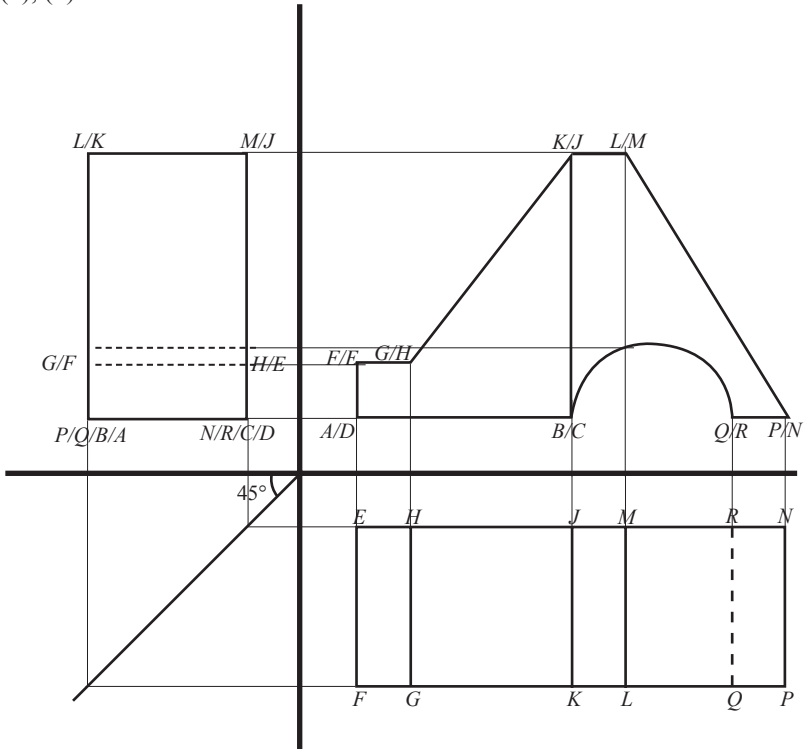
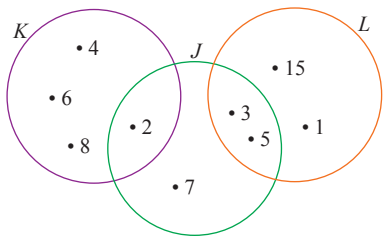
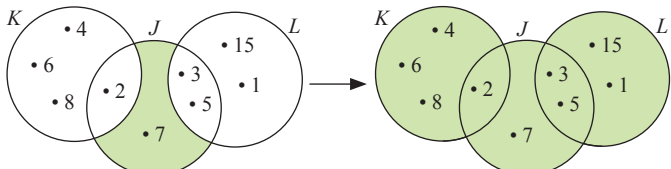
| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                        | Markah<br>Marks | Markah Total<br>Total Marks |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------|
| 1   | 4 sisi / sides = $4x + 4$<br>1 sisi / side = $\frac{4x + 4}{4} = x + 1$<br>Luas / Area = $(x + 1)(x + 1)$                                                                                                                                                 | 1<br>1          | 2                           |
| 2   | (a) Beza di antara jujukan / Difference between a sequence<br>$= \left( \frac{5}{3} - \frac{1}{3} \right) \div 2$<br>$= \frac{2}{3}$<br>$J = \frac{1}{3} + \frac{2}{3}$<br>$= \frac{3}{3}$<br>$= 1$<br>$K = \frac{5}{3} + \frac{2}{3}$<br>$= \frac{7}{3}$ | 1<br>1          | 3                           |
|     | (b) Tambah $\frac{2}{3}$ kepada nombor yang sebelumnya.<br>Add $\frac{2}{3}$ to the previous number.                                                                                                                                                      | 1               |                             |
| 3   | $m = 0.25$<br>(a) Kecerunan / Gradient = $\frac{\text{Mengufuk / Horizontal}}{\text{Mencancang / Vertical}}$<br>$0.25 = \frac{1.25}{x}$<br>$x = 6$<br>$\tan \theta = \frac{1.5}{6}$<br>$\theta = 14.04^\circ$                                             | 1<br>1          | 4                           |
|     | (b) $\sqrt{1.5^2 + 6^2} = 6.185$                                                                                                                                                                                                                          | 2               |                             |

| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Markah<br>Marks            | Markah Total<br>Total Marks |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-----------------------------|
| 4   | <p>Sofa <math>M = (5 \times 9^2) + (4 \times 9^1) + (7 \times 9^0) = 448</math><br/> Sofa <math>N = (2 \times 6^3) + (4 \times 6^2) + (4 \times 6^1) + (1 \times 6^0) = 601</math><br/> <math>\therefore</math> Sofa <math>M</math> lebih murah. / Sofa <math>M</math> is cheaper.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <p>2<br/>1</p>             | 3                           |
| 5   | <p>(a) <math>N \propto \frac{D}{P}</math><br/> <math>N = \frac{kD}{P}</math><br/> <math>480 = \frac{k(5\,000)}{80}</math><br/> <math>k = 7.68</math><br/> <math>N = \frac{7.68D}{P}</math></p> <p>(b) <math>D = 75\,000, P = 80</math><br/> <math>N = \frac{(7.68)(75\,000)}{80} = 7\,200</math></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <p>1<br/>1<br/>2</p>       | 4                           |
| 6   | <p>(a) Gaji / Salary = RM56 000<br/> Derma / Donation = RM200<br/> Pendapatan bercukai / Chargeable income<br/> <math>= 56\,000 - 200 - 9\,000 - 1\,800 - 3\,000</math><br/> <math>= \text{RM}42\,000</math></p> <p>(b) Kos perubatan selepas deduktibel / Medical cost after deductible<br/> <math>= 27\,000 - 2\,000</math><br/> <math>= \text{RM}25\,000</math><br/> Kos yang ditanggung oleh Athar / Cost borne by Athar<br/> <math>= \left(\frac{10}{100} \times 25\,000\right) + 2\,000</math><br/> <math>= \text{RM}4\,500</math></p>                                                                                                                                                                                                                             | <p>1<br/>1<br/>2<br/>1</p> | 5                           |
| 7   | <p>(a) <math>y = 3</math></p> <p>(b) (i) <math>13 = \sqrt{(8-3)^2 + (2-h)^2}</math><br/> <math>169 = 25 + 4 - 4h + h^2</math><br/> <math>0 = h^2 - 4h - 140</math><br/> <math>0 = (h-14)(h+10)</math><br/> <math>h-14=0 \quad h+10=0</math><br/> <math>h=14 \quad h=-10</math><br/> <math>\therefore</math> Koordinat rumah Liza ialah <math>(-10, 30)</math>. Maka, <math>h</math> adalah <math>-10</math>.<br/> The coordinate of Liza's house is <math>(-10, 30)</math>. Then, <math>h</math> is <math>-10</math>.</p> <p>(ii) <math>y = mx + c</math><br/> <math>m = \frac{8-3}{2-(-10)}</math><br/> <math>= \frac{5}{12}</math><br/> <math>3 = \frac{5}{12}(2) + c</math><br/> <math>c = \frac{13}{6}</math><br/> <math>y = \frac{5}{12}x + \frac{13}{6}</math></p> | <p>1<br/>1<br/>1<br/>1</p> | 5                           |

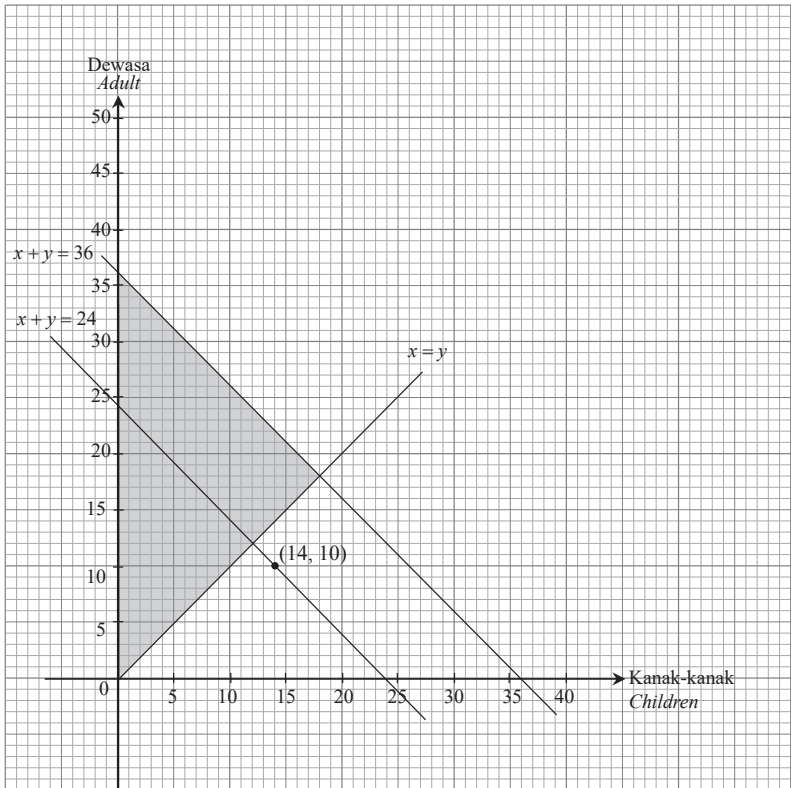


# Bahagian B

| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                                                                                                                                                 | Markah<br>Marks | Markah Total<br>Total Marks |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------|
| 11  | <p>(a) <math>DEF</math> dan <math>DGF</math>, <math>DAB</math> dan <math>DCB</math>, <math>EFJ</math> dan <math>GFJ</math>.<br/> <math>DEF</math> and <math>DGF</math>, <math>DAB</math> and <math>DCB</math>, <math>EFJ</math> and <math>GFJ</math>.<br/>           (Terima mana-mana jawapan yang munasabah)<br/>           (Accept any reasonable answer)</p>                   | 2               |                             |
|     | <p>(b)</p>                                                                                                                                                                                                                                                                                       | 2               |                             |
|     | <p>(c) (i) <b>Q:</b> Pantulan pada garis <math>x = 3</math>.<br/>           Reflection on line <math>x = 3</math>.</p> <p>(ii) <math>k = \frac{6}{3}</math><br/> <math>= 2</math></p> <p><b>P:</b> Pembesaran pada titik <math>J</math> dengan faktor skala, <math>k = 2</math>.<br/>           Enlargement at point <math>J</math> with the scale factor, <math>k = 2</math>.</p> | 3               | 9                           |

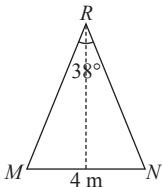
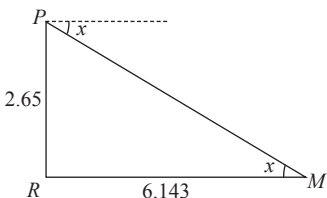
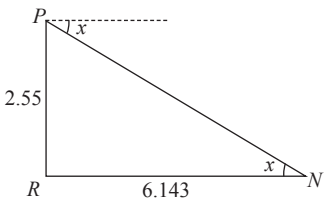
| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                                                                                                               | Markah<br>Marks                              | Markah Total<br>Total Marks |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-----------------------------|
| 12  | <p>(a), (b)</p>                                                                                                                                                                                                                                                 | <p>4</p> <p>5</p>                            | 9                           |
| 13  | <p>(a) Joe = {2, 3, 5, 7}</p> <p>Karl = {2, 4, 6, 8}</p> <p>Liam = {1, 3, 5, 15}</p> <p>(b) (i)</p>  <p>(ii) <math>(K \cup L)' \rightarrow (K \cup L)' \cup J'</math></p>  | <p>1</p> <p>1</p> <p>1</p> <p>3</p> <p>2</p> | 8                           |

| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Markah<br>Marks | Markah Total<br>Total Marks |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------|
| 14  | <p>(a) <math>p = \text{piza} / \text{pizza}, c = \text{kek cawan} / \text{cup cake}</math></p> $3p + 6c = 45 \dots\dots\dots \textcircled{1}$ $7p = 45 + c$ $7p - c = 45 \dots\dots\dots \textcircled{2}$ $\begin{pmatrix} 3 & 6 \\ 7 & -1 \end{pmatrix} \begin{pmatrix} p \\ c \end{pmatrix} = \begin{pmatrix} 45 \\ 45 \end{pmatrix}$ $\begin{pmatrix} p \\ c \end{pmatrix} = \frac{1}{3(-1) - 6(7)} \begin{pmatrix} -1 & -6 \\ -7 & 3 \end{pmatrix} \begin{pmatrix} 45 \\ 45 \end{pmatrix}$ $\begin{pmatrix} p \\ c \end{pmatrix} = \frac{1}{-45} \begin{pmatrix} -1(45) + (-6)(45) \\ -7(45) + 3(45) \end{pmatrix}$ $\begin{pmatrix} p \\ c \end{pmatrix} = \frac{1}{-45} \begin{pmatrix} -315 \\ -180 \end{pmatrix}$ $\begin{pmatrix} p \\ c \end{pmatrix} = \begin{pmatrix} 7 \\ 4 \end{pmatrix}$ <p><math>p = 7, c = 4</math></p> | 1               |                             |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1               |                             |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2               |                             |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2               |                             |
|     | <p>(b) Baucar ketiga / Third voucher = <math>125 - 45 - 45</math><br/>= 35</p> $4p + 2c$ $= (4 \quad 2) \begin{pmatrix} p \\ c \end{pmatrix}$ $= (4 \quad 2) \begin{pmatrix} 7 \\ 4 \end{pmatrix}$ $= 4(7) + 2(4)$ $= 36$ <p>Nilai belian ialah RM36 manakala nilai baucar ialah RM35.<br/>The purchase value is RM36 while the voucher value is RM35.<br/>∴ Nilai baucar tidak mencukupi. / Voucher value is insufficient.</p>                                                                                                                                                                                                                                                                                                                                                                                                          | 1               | 9                           |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1               |                             |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1               |                             |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1               |                             |

| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                            | Markah<br>Marks | Markah Total<br>Total Marks |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------|
| 15  | (a) $x + y \leq 36$<br>$x \leq y$                                                                                                             | 1               |                             |
|     | (b), (d)(ii)                                                                                                                                  | 1               |                             |
|     |                                                             | 4               |                             |
|     | (c) Tidak kerana titik (14, 10) terletak di luar kawasan rantau berlorek.<br><i>No because point (14, 10) lies outside the shaded region.</i> | 2               |                             |
|     | (d) (i) $x + y \leq 24$                                                                                                                       | 1               |                             |
|     | (ii) Rujuk graf di atas. / <i>Refer the above graph.</i>                                                                                      | 1               | 10                          |

### Bahagian C

| No. | Skema Pemarkahan<br>Marking Scheme                                                                                       | Markah<br>Marks | Markah Total<br>Total Marks |
|-----|--------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------|
| 16  | (a) (i) $23 - 18 = 5$ minit / minutes                                                                                    | 1               |                             |
|     | (ii) Laju purata / <i>Average speed</i> = $\frac{\text{Jumlah jarak / Total distance}}{\text{Jumlah masa / Total time}}$ |                 |                             |
|     | $= \frac{10}{45}$                                                                                                        | 1               |                             |
|     | $= 0.22 \text{ km min}^{-1}$                                                                                             | 1               |                             |

| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Markah<br>Marks | Markah Total<br>Total Marks |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------|
|     | <p>(b) Protein = 250<br/> Natrium / Sodium – kalsium / calcium, <math>(N - K) = 36^\circ</math><br/> Lemak / Fat = <math>11^\circ</math></p> <p><math>N - K = 36^\circ</math> ..... ①<br/> <math>11^\circ + 30^\circ + N + K + 209^\circ = 360^\circ</math> ..... ②</p> <p><math>N = 36^\circ + K</math><br/> <math>11^\circ + 30^\circ + (36^\circ + K) + K + 209^\circ = 360^\circ</math><br/> <math>286^\circ + 2K = 360^\circ</math><br/> <math>K = 37^\circ</math></p>                                                                                                                                                                                                                                                | 1               |                             |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1               |                             |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1               |                             |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1               |                             |
|     | <p>(c)</p>  <p><math>RM = RN = \frac{2}{\sin 19^\circ}</math><br/> <math>= 6.143 \text{ m}</math></p>  <p><math>\tan x = \frac{2.65}{6.143}</math><br/> <math>x = \tan^{-1} \left( \frac{2.65}{6.143} \right)</math><br/> <math>= 23.33^\circ</math></p>  <p><math>\tan x = \frac{2.55}{6.143}</math><br/> <math>x = \tan^{-1} \left( \frac{2.55}{6.143} \right)</math><br/> <math>= 22.54^\circ</math><br/> <math>23.33^\circ - 22.54^\circ = 0.79^\circ</math></p> | 1               |                             |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1               |                             |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1               |                             |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1               |                             |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1               |                             |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1               |                             |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1               |                             |

| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Markah<br>Marks                              | Markah Total<br>Total Marks |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-----------------------------|
|     | <p>(d) <math>\bar{x}_s = \frac{254 + 251 + 256 + 260 + 253}{5}</math><br/> <math>= 254.8</math></p> <p><math>\sigma_s = \sqrt{\frac{254^2 + 251^2 + 256^2 + 260^2 + 253^2}{5} - (254.8)^2}</math><br/> <math>= 3.059</math></p> <p><math>\bar{x}_T = \frac{252 + 255 + 258 + 254 + 255}{5}</math><br/> <math>= 254.8</math></p> <p><math>\sigma_T = \sqrt{\frac{252^2 + 255^2 + 258^2 + 254^2 + 255^2}{5} - (254.8)^2}</math><br/> <math>= 1.939</math></p> <p>Raket T. Nilai sisihan piawai yang lebih kecil menunjukkan laju bola tangkis lebih konsisten apabila menggunakan raket T.<br/> <i>Racquet T. A smaller standard deviation value indicates that the shuttlecock speed is more consistent when using racquet T.</i></p> | <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> | 15                          |
| 17  | <p>(a) (i) <math>5 : 35</math><br/> <math>= \frac{5}{5} : \frac{35}{5}</math><br/> <math>= 1 : 7</math></p> <p>(ii) <math>\frac{7}{35} = \frac{1}{5}</math></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <p>1</p> <p>2</p>                            |                             |
|     | <p>(b) <math>g = \text{guru} / \text{teacher}, m = \text{murid} / \text{student}</math></p> <p><math>g = m + 40</math> ..... ①<br/> <math>5g + 35m = 3\ 000</math> ..... ②</p> <p><math>5(m + 40) + 35m = 3\ 000</math><br/> <math>5m + 200 + 35m = 3\ 000</math><br/> <math>40m = 3\ 000 - 200</math><br/> <math>m = 70</math></p> <p><math>g = 70 + 40</math><br/> <math>g = 110</math></p> <p>Yuran yang perlu dibayar oleh seorang murid ialah RM70, manakala seorang guru ialah RM110.<br/> <i>The fee that has to be paid by a student is RM70, while a teacher is RM110.</i></p>                                                                                                                                              | <p>1</p> <p>1</p> <p>1</p> <p>1</p>          |                             |
|     | <p>(c) (i) Graf laju-masa : jarak = luas bawah graf<br/> <i>Graph speed-time : distance = area under a graph</i></p> <p>Luas bawah graf / <i>Area under a graph</i><br/> <math>= \left( \frac{1}{2} \times 90 \times \frac{[(36-8)+40]}{60} \right) + \left( \frac{1}{2} \times 80 \times \frac{[(200-75)+(191-79)]}{60} \right)</math><br/> <math>= 51 + 158</math><br/> <math>= 209 \text{ km}</math></p>                                                                                                                                                                                                                                                                                                                          | <p>1</p> <p>1</p>                            |                             |

| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                                                                                                              | Markah<br>Marks | Markah Total<br>Total Marks |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------|
|     | <p>(ii)</p>                                                                                                                                                                                                                                                                                                                                     | 3               | 15                          |
|     | <p>(d) Cikgu Linda: <math>P \rightarrow T \rightarrow S \rightarrow U \rightarrow R \rightarrow Q</math><br/> <math>= 15 + 21 + 20 + 11 + 9</math><br/> <math>= 76</math></p>                                                                                                                                                                   | 1               |                             |
|     | <p>Cikgu Kumar: <math>P \rightarrow Q \rightarrow R \rightarrow U \rightarrow S \rightarrow T</math><br/> <math>= 13 + 9 + 11 + 20 + 21</math><br/> <math>= 74</math></p>                                                                                                                                                                       | 1               |                             |
|     | <p>Pendapat Cikgu Kumar lebih baik kerana tempoh masa untuk sampai lebih pendek iaitu 74 minit. Ini sesuai dengan matlamat mereka yang mahu menjimatkan masa perjalanan.<br/> <i>Cikgu Kumar's opinion is better because the arrival time is shorter which is 74 minutes. This suits the purpose of those who want to save travel time.</i></p> | 1               |                             |

**KERTAS 1**

**1 B**

$$\begin{aligned} 16 \left( \sqrt[3]{\frac{1}{64}} \right)^{-1} &= 16 \left( \frac{1}{4} \right)^{-1} \\ &= 16(4) \\ &= 64 \end{aligned}$$

**2 C**

$$\begin{aligned} 5.4 \times 10^3 + 4.7 \times 10^2 &= 5.4 \times 10^3 + 0.47 \times 10^3 \\ &= (5.4 + 0.47) \times 10^3 \\ &= 5.87 \times 10^3 \end{aligned}$$

**3 D**

$$\begin{aligned} \text{A: } 615_{10} - 46_{10} &= 569_{10} \\ \text{B: } 615_9 - 46_9 &= 558_9 \\ \text{C: } 615_8 - 46_8 &= 547_8 \\ \text{D: } 615_7 - 46_7 &= 536_7 \end{aligned}$$

**4 C**

$$\begin{aligned} \text{RM}156.25 \times 2.5\% &= \text{RM}3.90625 \\ &= \text{RM}3.91 \text{ (tiga angka bererti / three significant figures)} \end{aligned}$$

**5 D**

$$\begin{aligned} \text{A: } 5.49 \times 10^{-4} &= 0.000549 \\ \text{B: } 5.48 \times 10^{-3} &= 0.00548 \\ \text{C: } 5.48 \times 10^3 &= 5\,480 \\ \text{D: } 5.49 \times 10^4 &= 54\,900 \\ 53\,770, 54\,320, 54\,900, 55\,420 \end{aligned}$$

**6 A**

$$\begin{aligned} \text{Modal Azhar / Azhar's capital} &= \text{RM}(5.3 \times 10^4) \\ \text{Modal Baba / Baba's capital} &= \text{RM}(5.3 \times 10^4) - \text{RM}5\,000 \\ \text{Modal Chew / Chew's capital} &= \text{RM}(5.3 \times 10^4) - \text{RM}5\,000 \\ \text{Jumlah modal / Total amount of capital} &= \text{RM}(1.7 \times 10^5) \\ \text{Modal Dolly / Dolly's capital} \\ &= \text{RM}(1.7 \times 10^5) - \text{RM}(5.3 \times 10^4) - [\text{RM}(5.3 \times 10^4) - \text{RM}5\,000] - [\text{RM}(5.3 \times 10^4) - \text{RM}5\,000] \\ &= \text{RM}(17 \times 10^4) - \text{RM}(5.3 \times 10^4) - [\text{RM}(5.3 \times 10^4) - \text{RM}(0.5 \times 10^4)] - [\text{RM}(5.3 \times 10^4) - \text{RM}(0.5 \times 10^4)] \\ &= \text{RM}(17 \times 10^4) - \text{RM}(5.3 \times 10^4) - \text{RM}(4.8 \times 10^4) - \text{RM}(4.8 \times 10^4) \\ &= \text{RM}[(17 - 5.3 - 4.8 - 4.8) \times 10^4] \\ &= \text{RM}(2.1 \times 10^4) \end{aligned}$$

**7 D**

$$\begin{aligned} m &= \frac{1+n}{3-2n} \\ m(3-2n) &= 1+n \\ 3m-2mn &= 1+n \\ -n-2mn &= 1-3m \\ n+2mn &= 3m-1 \\ n(1+2m) &= 3m-1 \\ n &= \frac{3m-1}{1+2m} \end{aligned}$$

8 C

$$\begin{aligned}2m + 5 &= 7(1 - m) \\2m + 5 &= 7 - 7m \\2m + 7m &= 7 - 5 \\9m &= 2 \\m &= \frac{2}{9}\end{aligned}$$

9 D

$$\begin{aligned}y - 6 &< 2(2y + 3) \\y - 6 &< 4y + 6 \\y - 4y &< 6 + 6 \\-3y &< 12 \\y &> \frac{12}{-3} \\y &> -4\end{aligned}$$

10 A

$$\begin{aligned}-3x + 5 &\leq 6 + x \\-3x - x &\leq 6 - 5 \\-4x &\leq 1 \\x &\geq \frac{1}{-4} \\x &\geq -\frac{1}{4}\end{aligned}$$

11 C

$$\begin{aligned}j &\propto \frac{1}{p} \\j &= \frac{k}{p} \\120 &= \frac{k}{6.5} \\k &= 780 \\j &= \frac{780}{p}\end{aligned}$$

12 B

$$\begin{aligned}p &\propto \sqrt{w} \\p &= k\sqrt{w} \\k &= \frac{p}{\sqrt{w}}\end{aligned}$$

A:

$$k = \frac{4}{\sqrt{9}} = \frac{4}{3}$$

$$k = \frac{3}{\sqrt{16}} = \frac{3}{4}$$

Nilai-nilai  $k$  adalah berbeza.  
*The values of  $k$  are different.*

B:

$$k = \frac{3}{\sqrt{9}} = \frac{3}{3} = 1$$

$$k = \frac{4}{\sqrt{16}} = \frac{4}{4} = 1$$

Nilai-nilai  $k$  adalah sama.  
*The values of  $k$  are same.*

**C:**

$$k = \frac{3}{\sqrt{9}} = \frac{3}{3} = 1$$

$$k = \frac{5}{\sqrt{16}} = \frac{5}{4}$$

Nilai-nilai  $k$  adalah berbeza.

*The values of  $k$  are different.*

**D:**

$$k = \frac{4}{\sqrt{9}} = \frac{4}{3}$$

$$k = \frac{6}{\sqrt{16}} = \frac{3}{2}$$

Nilai-nilai  $k$  adalah berbeza.

*The values of  $k$  are different.*

**13 C**

$$\begin{aligned} \begin{bmatrix} -7 & 4 \\ 0 & 8 \end{bmatrix} + 3 \begin{bmatrix} 2 & 6 \\ 1 & -1 \end{bmatrix} &= \begin{bmatrix} -7 & 4 \\ 0 & 8 \end{bmatrix} + \begin{bmatrix} 6 & 18 \\ 3 & -3 \end{bmatrix} \\ &= \begin{bmatrix} -7+6 & 4+18 \\ 0+3 & 8+(-3) \end{bmatrix} \\ &= \begin{bmatrix} -1 & 22 \\ 3 & 5 \end{bmatrix} \end{aligned}$$

**14 B**

$$\angle VST = 25^\circ$$

$$\angle PTS = 25^\circ + 30^\circ = 55^\circ$$

$$\angle TPQ = 180^\circ - 30^\circ = 150^\circ$$

$$\begin{aligned} x + y &= [(5-2) - 180^\circ] - 55^\circ - 150^\circ - 100^\circ \\ &= 235^\circ \end{aligned}$$

**15 B**

$$NR = 10 \text{ cm} - 4 \text{ cm} = 6 \text{ cm}$$

$$MR = \frac{4}{5} \times 10 \text{ cm} = 8 \text{ cm}$$

$$\begin{aligned} \tan x^\circ &= -\frac{NR}{MR} \\ &= -\frac{6}{8} \\ &= -\frac{3}{4} \end{aligned}$$

**16 B**

$$\angle POM = 2 \times 34^\circ = 68^\circ$$

$$\begin{aligned} x &= 180^\circ - 68^\circ - 90^\circ \\ &= 22^\circ \end{aligned}$$

**17 D**

**A:** Bukan teselasi kerana terdapat bintik yang tidak berulang.

*Not a tessellation because there are non-repeating spots.*

**B:** Bukan teselasi kerana terdapat bintik yang tidak berulang.

*Not a tessellation because there are non-repeating spots.*

**C:** Bukan teselasi kerana terdapat bintik yang tidak berulang.

*Not a tessellation because there are non-repeating spots.*

**D:** Merupakan teselasi yang terdiri daripada bintik yang berulang.

*It is a tessellation consisting of repeating spots.*

18 C

$$P = \{A, B\}$$

$$P' = \{C, D\}$$

$$Q = \{D\}$$

$$Q' = \{A, B, C\}$$

$$R = \{B, C, D\}$$

$$\begin{aligned} P' \cap Q' \cap R &= \textcircled{C} \quad D \cap A \quad B \cap \textcircled{C} \cap B \quad C \quad D \\ &= \textcircled{C} \cap B \quad \textcircled{C} \quad D \\ &= C \end{aligned}$$

19 A

$$\begin{aligned} \text{Min} / \text{Mean} &= \frac{2.3 + 4.5 + 5.7 + 5.7 + 3.8}{5} \\ &= 4.4 \end{aligned}$$

20 B

Bilangan bungkusan cendol yang dijual

*The number of packet of cendol sold*

$$= 60 + 65 + 50 + 55 + 80$$

$$= 310$$

Bilangan bungkusan susu soya yang dijual

*The number of packet of soy milk sold*

$$= 40 + 50 + 40 + 40 + 60$$

$$= 230$$

Katakan harga sebungkus cendol / *Let the price of a packet of cendol = x*

$$310x + 230(\text{RM}1.20) = \text{RM}834$$

$$310x + \text{RM}276 = \text{RM}834$$

$$310x = \text{RM}558$$

$$x = \frac{\text{RM}558}{310}$$

$$x = \text{RM}1.80$$

21 A

$$\begin{aligned} m^3 \times n \times p^7 \times m^3 \times n^{-2} \times p^3 &= m^{3+3} \times n^{1+(-2)} \times p^{7+3} \\ &= m^6 \times n^{-1} \times p^{10} \\ &= \frac{m^6 p^{10}}{n} \end{aligned}$$

22 B

$$y = ax^n - x + c$$

$$y = (0)x^n - x + 3$$

$$y = -x + 3$$

$$\text{Kecerunan} / \text{Gradient} = -1$$

$$\text{Pintasan-}y / y\text{-intercept} = 3$$

23 B

Dari graf, laju seragam ialah 60 km j<sup>-1</sup>.

*From the graph, the uniform speed is 60 km h<sup>-1</sup>.*

24 C

$$\text{A: } y > 2x + 4$$

$$\text{B: } y < 2x + 4$$

$$\text{C: } y \geq 2x + 4$$

$$\text{D: } y \leq 2x + 4$$

25 A

$$A^{-1} = \frac{1}{ad-bc} \begin{pmatrix} d & -b \\ -c & a \end{pmatrix}$$

$$M^{-1} = \frac{1}{(10)(1) - q(-3)} \begin{pmatrix} p & 3 \\ 2 & 10 \end{pmatrix}$$

$$-bc = -q(-3)$$

$$-6 = 3q$$

$$q = -2$$

$$p = d$$

$$p = 1$$

26 C

$$T \propto \sqrt{L}$$

$$T = k\sqrt{L}$$

$$3 = k\sqrt{36}$$

$$k = \frac{3}{6}$$

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

$$T = \frac{\sqrt{L}}{2}$$

27 D

$$\tan \theta = \frac{5}{12}$$

$$\frac{XY}{YZ} = \frac{5}{12}$$

$$XZ^2 = XY^2 + YZ^2$$

$$= 5^2 + 12^2$$

$$= 169$$

$$XZ = 13$$

Diberi  $XZ = 26$ . Oleh itu,  $13 \times 2 = 26$ .

Given  $XZ = 26$ . Thus,  $13 \times 2 = 26$ .

$$YZ = 12 \times 2$$

$$= 24 \text{ cm}$$

28 A

$$\angle SOQ = 2 \times 52^\circ = 104^\circ$$

$$\angle PSO = 180^\circ - 60^\circ = 120^\circ$$

$$x = 360^\circ - 90^\circ - 104^\circ - 120^\circ$$
$$= 46^\circ$$

29 B

$$\text{Skala} = \frac{\text{Ukuran lukisan berskala}}{\text{Ukuran objek}}$$

$$\text{Scale} = \frac{\text{Measurement of scale drawing}}{\text{Measurement of object}}$$

$$\frac{1}{8} = \frac{10}{SR}$$

$$SR = 80 \text{ cm}$$

$$PS / QR = \frac{4\,000}{80}$$

$$= 50 \text{ cm}$$

$$\text{Perimeter} = 50 + 50 + 80 + 80$$

$$= 260 \text{ cm}$$

30 C

A mempunyai jarak lebih daripada 4 cm dari titik  $L$  dan titik  $M$

*A has distance more than 4 cm from point  $L$  and  $M$*

B mempunyai jarak lebih daripada 4 cm dari titik  $M$

*B has distance more than 4 cm from point  $M$*

C mempunyai jarak kurang daripada 4 cm dari setiap titik  $J$ , titik  $M$  dan titik  $L$

*C has distance less than 4 cm from each of the points  $J$ ,  $M$  and  $L$*

D mempunyai jarak lebih daripada 4 cm dari titik  $J$

*D has distance more than 4 cm from point  $J$*

31 C

– Terdapat rantau persilangan antara set  $P$  dan set  $Q$ .

*There is a region of intersection between set  $P$  and set  $Q$ .*

– Terdapat rantau kesatuan antara persilangan set  $P$  dan set  $Q$ , dengan set  $R$ .

*There is a region of union between the intersection of set  $P$  and set  $Q$ , with set  $R$ .*

$(P \cap Q) \cup R$

32 D

Mod / Mode = 170

$x = 171$

33 A

$P = 10\,000$ ,  $r = 0.05$ ,  $n = 4$ ,  $t = 2$

$$MV = P \left( 1 + \frac{r}{n} \right)^{nt}$$

$$= 10\,000 \left( 1 + \frac{0.05}{4} \right)^{(4)(2)}$$

$$= 10\,000(1.104486101)$$

$$= 11\,044.86$$

Faedah / Interest = RM11 044.86 – RM10 000

$$= \text{RM}1\,044.86$$

34 D

**Skim pinjaman emas / Gold loan scheme**

$$\begin{aligned} \text{Faedah untuk 7 tahun / Interest for 7 years} &= \text{RM}10\,000 \times \frac{6}{100} \times 7 \\ &= \text{RM}4\,200 \end{aligned}$$

$$\begin{aligned} \text{Jumlah bayaran balik / Total repayment} &= \text{RM}10\,000 + \text{RM}4\,200 \\ &= \text{RM}14\,200 \end{aligned}$$

$$\begin{aligned} \text{Ansuran bulanan / Monthly installment} &= \frac{\text{RM}14\,200}{84} \\ &= \text{RM}169.05 \end{aligned}$$

Skim pinjaman premium mempunyai ansuran bulanan yang lebih rendah.

*Premium loan scheme has lower monthly installment.*

$$\begin{aligned} \text{Beza ansuran bulanan / Difference of monthly installment} &= \text{RM}169.05 - \text{RM}150 \\ &= \text{RM}19.05 \end{aligned}$$

$$\begin{aligned} \text{Penjimatan / Savings} &= \text{RM}19.05 \times 84 \\ &= \text{RM}1\,600.20 \approx \text{RM}1\,600 \end{aligned}$$

35 B

Katakan kos hamper pertama / Let the cost of the first hamper =  $x$

$x$ ,  $2x$ ,  $4x$ ,  $8x$ ,  $16x$ ,  $32x$

$$x + 2x + 4x + 8x + 16x + 32x = 63x$$

$$63(\text{RM}30) = \text{RM}1\,890$$

36 A

$$\sin 212^\circ = -0.5299192642$$

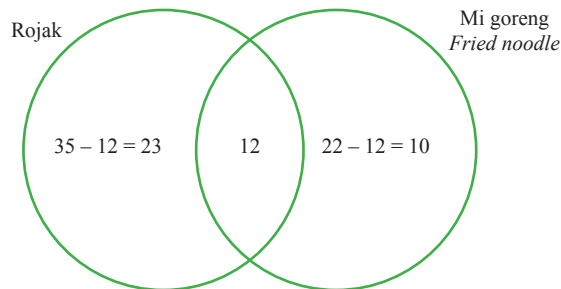
$$\text{A: } \sin 328^\circ = -0.5299192642$$

$$\text{B: } \sin 302^\circ = -0.8480480962$$

$$\text{C: } \sin 244^\circ = -0.8987940463$$

$$\text{D: } \sin 238^\circ = -0.8480480962$$

37 B



Bilangan pelanggan yang suka satu jenis makanan sahaja

*The number of customers who like one type of food only*

$$= 23 + 10$$

$$= 33$$

38 D

$$P' = (7, 5)$$

$$P = (7 - 5, 5 + 2)$$

$$= (2, 7)$$

$$P = \text{D}$$

39 D

A: Peristiwa ini tidak dipengaruhi oleh kesudahan yang telah berlaku sebelum ini.

*The event is not affected by the outcome that had already occurred previously.*

B: Peristiwa ini tidak dipengaruhi oleh kesudahan yang telah berlaku sebelum ini.

*The event is not affected by the outcome that had already occurred previously.*

C: Peristiwa ini tidak dipengaruhi oleh kesudahan yang telah berlaku sebelum ini.

*The event is not affected by the outcome that had already occurred previously.*

D: Peristiwa ini dipengaruhi oleh kesudahan yang telah berlaku sebelum ini.

*The event is affected by the outcome that had already occurred previously.*

40 B

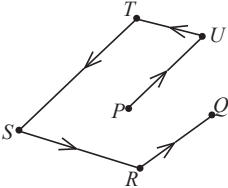
Pelepasan cukai meliputi caruman Kumpulan Wang Simpanan Pekerja (KWSP), rawatan perubatan dan yuran pengajian.

*The individual tax rebate consists of contributions to the Employees Provident Fund (EPF), medical treatment and education fees.*

## Bahagian A

[illegible]

| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                                                                                                | Markah<br>Marks               | Markah Total<br>Total Marks |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-----------------------------|
|     | $y = \frac{1}{2}x + (-5)$<br>$y = \frac{x}{2} - 5$                                                                                                                                                                                                                                                                                | 1                             | 4                           |
| 3   | <p>(a) <math>\frac{\text{Luas sektor} / \text{Area of sector}}{\pi j^2} = \frac{\theta}{360^\circ}</math></p> $\frac{115.5}{\left(\frac{22}{7}\right)^2} = \frac{360^\circ - 240^\circ}{360^\circ}$ $j^2 = 110.25$ $j = 10.5$                                                                                                     | 1<br><br><br><br>1            | 4                           |
|     | <p>(b) <math>\frac{\text{Panjang lengkok} / \text{Arc length}}{2\pi j} = \frac{\theta}{360^\circ}</math></p> $\frac{\text{Panjang lengkok} / \text{Arc length}}{2\left(\frac{22}{7}\right)(10.5)} = \frac{120^\circ}{360^\circ}$ <p>Panjang lengkok minor <math>LM = 22</math> cm<br/>The minor arc length of <math>LM</math></p> | 1<br><br><br>1                |                             |
| 4   | $MV = P\left(1 + \frac{r}{n}\right)^{nt}$<br>$= 10\,000 \left(1 + \frac{0.03}{4}\right)^{(4)(2)}$<br>$= 10\,615.99$<br>Jumlah faedah yang diperoleh / The total interest received<br>$= \text{RM}10\,615.99 - \text{RM}10\,000$<br>$= \text{RM}615.99$                                                                            | 1<br><br><br>1<br>1           | 3                           |
| 5   | $\frac{1}{2} \times \text{tapak} \times \text{tinggi} = \text{luas segi tiga}$<br>$\frac{1}{2} \times \text{base} \times \text{height} = \text{area of triangle}$<br>$\frac{1}{2}(x)(2+x) = 7.5$ $x^2 + 2x - 15 = 0$ $(x-3)(x+5) = 0$<br>$x = 3, x = -5$<br>$x > 0, x = 3$<br>$y = 2(2+x)$<br>$= 2(2+3)$<br>$= 10$ cm             | 1<br>1<br>1<br><br>1<br><br>1 | 5                           |
| 6   | <p>(a) Antejadian / Antecedent: <math>a^2 - b^2 = (a-b)^2</math><br/>Akibat / Consequence: <math>a^2 - b^2 = (a-b)(a+b)</math></p>                                                                                                                                                                                                | 1<br>1                        | 4                           |
|     | <p>(b) Akas / Converse:<br/>Jika / If <math>a^2 - b^2 = (a-b)(a+b)</math>, maka / then <math>a^2 - b^2 = (a-b)^2</math></p> <p>Songsangan / Inverse:<br/>Jika / If <math>a^2 - b^2 \neq (a-b)^2</math>, maka / then <math>a^2 - b^2 \neq (a-b)(a+b)</math></p>                                                                    | 1<br><br>1                    |                             |

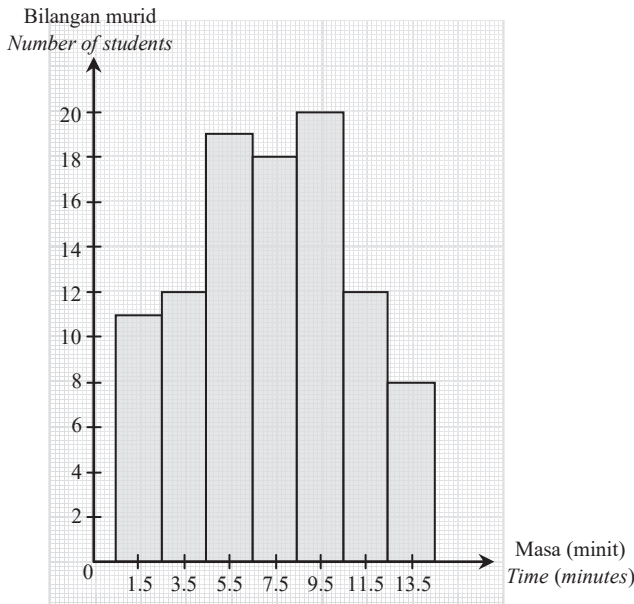
| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                                                                                                                  | Markah<br>Marks           | Markah Total<br>Total Marks |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-----------------------------|
| 7   | <p>Laluan terpendek mesti melalui semua pasar raya,<br/>Shortest route must pass through all supermarkets,<br/><math>P \rightarrow U \rightarrow T \rightarrow S \rightarrow R \rightarrow Q</math></p> <p>7.8 km + 3 km + 7 km + 9 km + 5.3 km<br/>= 32.1 km</p>  | 1<br>1<br>1               | 3                           |
| 8   | <p>(a) Petrol<br/>(terima jawapan lain yang munasabah)<br/>(accept other reasonable answers)</p> <p>(b) Jumlah pendapatan – Jumlah perbelanjaan<br/>Total income – Total expenses<br/>= RM1 700 + RM987.60 – (RM2 350 + RM860.90)<br/>= –RM523.30<br/>(Aliran tunai negatif / Negative cash flow)</p>                                               | 1<br><br>2<br>1           | 4                           |
| 9   | <p>P(Sekurang-kurangnya seorang ahli perempuan dipilih)<br/>P(At least one girl member is chosen)</p> $= \left(\frac{2}{6} \times \frac{1}{5}\right) + \left(\frac{2}{6} \times \frac{4}{5}\right) + \left(\frac{4}{6} \times \frac{2}{5}\right)$ $= \frac{3}{5}$                                                                                   | 2<br>1                    | 3                           |
| 10  | <p>(a) Ubahan langsung<br/>Direct variation</p> <p>(b) (i) <math>y \propto x</math><br/><math>y = kx</math><br/><math>15 = k(6)</math><br/><math>k = \frac{5}{2}</math><br/><math>y = \frac{5}{2}x</math><br/>(ii) <math>40 = \frac{5}{2}x</math><br/><math>x = 16</math></p>                                                                       | 1<br><br>1<br>1<br>1<br>1 | 5                           |

### Bahagian B

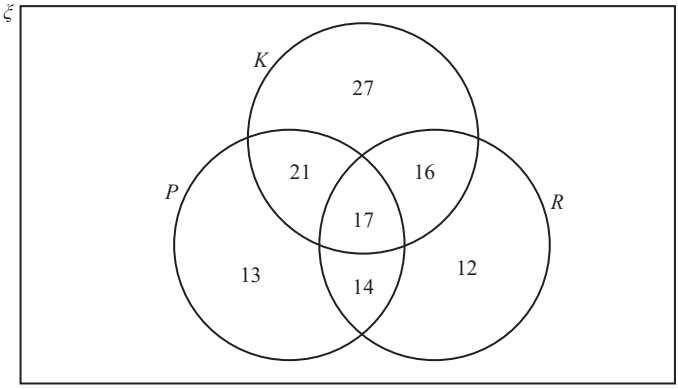
| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                                                                                                                 | Markah<br>Marks       | Markah Total<br>Total Marks |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------------|
| 11  | <p>(a) Premium asas / Basic premium</p> $= \text{RM}339.10 + \text{RM}26 \times \frac{90\,000 - 1\,000}{1\,000}$ $= \text{RM}2\,653.10$ <p>NCD = <math>\text{RM}2\,653.10 \times 55\%</math><br/>= <math>\text{RM}1\,459.21</math></p> <p>Premium kasar / The gross premium</p> $= \text{RM}2\,653.10 - \text{RM}1\,459.21$ $= \text{RM}1\,193.89$ | 2<br>1<br>1<br>1<br>1 |                             |

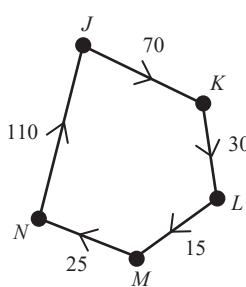
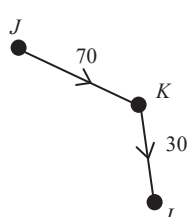
| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Markah<br>Marks                                                | Markah Total<br>Total Marks |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|-----------------------------|
|     | <p>(b) Wang yang dapat dikumpul setiap bulan<br/> <i>Money saved every month</i><br/> <math>= \text{Wang saku mingguan} + \text{Upah kerja sambilan} - \text{Perbelanjaan persekolahan}</math><br/> <i>Weekly pocket money + Part-time wages - School expenses</i><br/> <math>= 4 \times \text{RM}50 + 4 \times \text{RM}20 - 20 \times \text{RM}5</math><br/> <math>= \text{RM}180</math></p> <p>Jumlah simpanan setelah 6 bulan / <i>Total savings after 6 months</i><br/> <math>= \text{RM}180 \times 6 + \text{RM}200</math><br/> <math>= \text{RM}1\,280</math></p> <p>Jumlah simpanan – Yuran penyertaan<br/> <i>Total savings - Admission fee</i><br/> <math>= \text{RM}1\,280 - \text{RM}1\,200</math><br/> <math>= \text{RM}80</math></p> <p>Jamal dapat mengumpul wang untuk membayar yuran penyertaan ekspedisi itu.<br/> <i>Jamal can save enough money to pay the expedition fee.</i></p> | <p>1</p> <p>1</p> <p>1</p>                                     | 9                           |
| 12  | <p>(a) (i) 10 minit / minutes<br/> (ii) 20 km</p> <p>(b) (i) <math>\text{Laju} / \text{Speed} = \frac{50 - 30}{\left(\frac{50}{60}\right)}</math><br/> <math>= 24 \text{ km j}^{-1} / \text{km h}^{-1}</math><br/> (ii) Katakan jarak motosikal Sam dari Parit Buntar pada minit ke 62.5 = J<br/> <i>Let distance of Sam's motorcycle from Parit Buntar at 62.5<sup>th</sup> minute = J</i><br/> <math>\frac{J - 30}{62.5 - 50} = \frac{50 - 30}{100 - 50}</math><br/> <math>\frac{J - 30}{12.5} = 0.4</math><br/> <math>J - 30 = 5</math><br/> <math>J = 35 \text{ km}</math></p> <p>(c) <math>\frac{50}{\left(\frac{t}{60}\right)} = \frac{50}{\left(\frac{100}{60}\right)} + 10</math><br/> <math>\frac{50}{\left(\frac{t}{60}\right)} = 40</math><br/> <math>\frac{t}{60} = 1.25</math><br/> <math>t = 75 \text{ minit} / \text{minutes}</math></p>                                                | <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>2</p> <p>1</p> | 9                           |
| 13  | <p>(a) <math>JK = \begin{pmatrix} 2 \\ 5 \end{pmatrix} \begin{pmatrix} 4 &amp; -3 \end{pmatrix}</math><br/> <math>= \begin{pmatrix} 2 \times 4 &amp; 2 \times (-3) \\ 5 \times 4 &amp; 5 \times (-3) \end{pmatrix}</math><br/> <math>= \begin{pmatrix} 8 &amp; -6 \\ 20 &amp; -15 \end{pmatrix}</math><br/> <math>\therefore 2 \times 2</math></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <p>1</p> <p>1</p>                                              |                             |

| No.                      | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Markah<br>Marks                                       | Markah Total<br>Total Marks |     |     |     |      |      |          |  |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|-----------------------------|-----|-----|-----|------|------|----------|--|
|                          | <p>(b) (i) Katakan umur Rokiah / <i>Let the age of Rokiah = R</i><br/>Katakan umur Nuha / <i>Let the age of Nuha = N</i></p> <p><math>R = 3N</math><br/><math>R - 3N = 0 \dots\dots\dots ①</math><br/><math>\frac{R + N}{2} = 36</math><br/><math>R + N - 72 = 0 \dots\dots\dots ②</math></p> <p>(ii) <math>R - 3N = 0</math><br/><math>R + N = 72</math></p> <p><math>\begin{pmatrix} 1 &amp; -3 \\ 1 &amp; 1 \end{pmatrix} \begin{pmatrix} R \\ N \end{pmatrix} = \begin{pmatrix} 0 \\ 72 \end{pmatrix}</math><br/><math>\begin{pmatrix} R \\ N \end{pmatrix} = \frac{1}{(1)(1) - (-3)(1)} \begin{pmatrix} 1 &amp; 3 \\ -1 &amp; 1 \end{pmatrix} \begin{pmatrix} 0 \\ 72 \end{pmatrix}</math><br/><math>= \frac{1}{4} \begin{pmatrix} 216 \\ 72 \end{pmatrix}</math><br/><math>= \begin{pmatrix} 54 \\ 18 \end{pmatrix}</math><br/><math>R = 54</math><br/><math>N = 18</math></p> | <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> | <p>8</p>                    |     |     |     |      |      |          |  |
| 14                       | <p>(a) (i) Pembesaran pada pusat (2, -4) dengan faktor skala <math>-\frac{1}{2}</math>.<br/><i>Enlargement at the centre of (2, -4) with the scale factor of <math>-\frac{1}{2}</math>.</i></p> <p>(ii) Putaran 180° pada asalan.<br/><i>Rotation of 180° at the origin.</i></p> <p>(b) Luas imej = <math>k^2 \times</math> Luas objek<br/><i>Area of image = <math>k^2 \times</math> Area of object</i></p> <p><math>MNQSTU = \left(-\frac{1}{2}\right)^2 \times 125 \text{ cm}^2</math><br/><math>= 31.25 \text{ cm}^2</math></p>                                                                                                                                                                                                                                                                                                                                                  | <p>3</p> <p>3</p> <p>2</p> <p>1</p>                   | <p>9</p>                    |     |     |     |      |      |          |  |
| 15                       | <p>(a)</p> <table><tr><td>Titik tengah<br/>Midpoint</td></tr><tr><td>3.5</td></tr><tr><td>5.5</td></tr><tr><td>7.5</td></tr><tr><td>9.5</td></tr><tr><td>11.5</td></tr><tr><td>13.5</td></tr></table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Titik tengah<br>Midpoint                              | 3.5                         | 5.5 | 7.5 | 9.5 | 11.5 | 13.5 | <p>1</p> |  |
| Titik tengah<br>Midpoint |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                       |                             |     |     |     |      |      |          |  |
| 3.5                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                       |                             |     |     |     |      |      |          |  |
| 5.5                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                       |                             |     |     |     |      |      |          |  |
| 7.5                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                       |                             |     |     |     |      |      |          |  |
| 9.5                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                       |                             |     |     |     |      |      |          |  |
| 11.5                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                       |                             |     |     |     |      |      |          |  |
| 13.5                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                       |                             |     |     |     |      |      |          |  |

| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                 | Markah<br>Marks | Markah Total<br>Total Marks |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------|
|     | (b) (i) Min / Mean<br>$\frac{(11 \times 1.5) + (12 \times 3.5) + (19 \times 5.5) + (18 \times 7.5) + (20 \times 9.5) + (12 \times 11.5) + (8 \times 13.5)}{100}$ $= 7.34$                                                                          | 1<br>1          |                             |
|     | (ii) $\sigma = \sqrt{\frac{\sum fx^2}{\sum f} - \bar{x}^2}$<br>$= \sqrt{\frac{(11 \times 1.5^2) + (12 \times 3.5^2) + (19 \times 5.5^2) + (18 \times 7.5^2) + (20 \times 9.5^2) + (12 \times 11.5^2) + (8 \times 13.5^2)}{100} - 7.34^2}$ $= 3.49$ | 2<br>1          |                             |
| (c) |                                                                                                                                                                  | 4               | 10                          |

### Bahagian C

| No. | Skema Pemarkahan<br>Marking Scheme                                                      | Markah<br>Marks | Markah Total<br>Total Marks |
|-----|-----------------------------------------------------------------------------------------|-----------------|-----------------------------|
| 16  | (a)  | 3               |                             |

| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                                                                                                                     | Markah<br>Marks                                                            | Markah Total<br>Total Marks |                                 |   |                                                                            |   |                                                                            |   |                                  |                  |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|-----------------------------|---------------------------------|---|----------------------------------------------------------------------------|---|----------------------------------------------------------------------------|---|----------------------------------|------------------|
|     | (b) (i) $Q = RM655 \times \frac{100}{10}$<br>$= RM6\ 550$<br>Jumlah pendapatan / Total income<br>$= RM6\ 550 + RM350$<br>$= RM6\ 900$                                                                                                                                                                                                                  | 1<br>1<br>1                                                                |                             |                                 |   |                                                                            |   |                                                                            |   |                                  |                  |
|     | (ii) Aliran tunai / Cash flow<br>$= RM6\ 550 + RM350 - RM655 - RM300 - RM900 - RM1\ 050 - RM600 - RM600 - RM500 - RM1\ 000 - RM500$<br>$= RM795$                                                                                                                                                                                                       | 2<br>1                                                                     |                             |                                 |   |                                                                            |   |                                                                            |   |                                  |                  |
|     | Aliran tunai Hayati adalah positif, iaitu lebih RM795.<br>Hayati's cash flow is positive, having surplus RM795.                                                                                                                                                                                                                                        | 1                                                                          |                             |                                 |   |                                                                            |   |                                                                            |   |                                  |                  |
|     | (c)                                                                                                                                                                                                                                                                                                                                                    |                                                                            |                             |                                 |   |                                                                            |   |                                                                            |   |                                  |                  |
|     | <table><tr><td>M</td><td>Membayar RM2 800<br/>Pay RM2 800</td></tr><tr><td>A</td><td>RM2 800 boleh dibayar dalam 5 bulan<br/>RM2 800 can be paid within 5 months</td></tr><tr><td>R</td><td>Simpanan 5 bulan adalah sebanyak RM3 975<br/>Savings of 5 months is RM3 975</td></tr><tr><td>T</td><td>Dalam 5 bulan<br/>Within 5 months</td></tr></table> | M                                                                          |                             | Membayar RM2 800<br>Pay RM2 800 | A | RM2 800 boleh dibayar dalam 5 bulan<br>RM2 800 can be paid within 5 months | R | Simpanan 5 bulan adalah sebanyak RM3 975<br>Savings of 5 months is RM3 975 | T | Dalam 5 bulan<br>Within 5 months | 1<br>1<br>1<br>1 |
|     | M                                                                                                                                                                                                                                                                                                                                                      | Membayar RM2 800<br>Pay RM2 800                                            |                             |                                 |   |                                                                            |   |                                                                            |   |                                  |                  |
|     | A                                                                                                                                                                                                                                                                                                                                                      | RM2 800 boleh dibayar dalam 5 bulan<br>RM2 800 can be paid within 5 months |                             |                                 |   |                                                                            |   |                                                                            |   |                                  |                  |
|     | R                                                                                                                                                                                                                                                                                                                                                      | Simpanan 5 bulan adalah sebanyak RM3 975<br>Savings of 5 months is RM3 975 |                             |                                 |   |                                                                            |   |                                                                            |   |                                  |                  |
|     | T                                                                                                                                                                                                                                                                                                                                                      | Dalam 5 bulan<br>Within 5 months                                           |                             |                                 |   |                                                                            |   |                                                                            |   |                                  |                  |
|     | Hayati mencapai matlamatnya kerana dia mempunyai lebih RM1 175 selepas membayar RM2 800.<br>Hayati achieved her goal because she had surplus of RM1 175 after paying RM2 800.                                                                                                                                                                          | 1                                                                          |                             |                                 |   |                                                                            |   |                                                                            |   |                                  |                  |
| 15  |                                                                                                                                                                                                                                                                                                                                                        |                                                                            |                             |                                 |   |                                                                            |   |                                                                            |   |                                  |                  |
| 17  | (a) (i)                                                                                                                                                                                                                                                                                                                                                |                                                                            |                             |                                 |   |                                                                            |   |                                                                            |   |                                  |                  |
|     |  <p>(Terima mana-mana jawapan yang munasabah)<br/>(Accept any reasonable answers)</p>                                                                                                                                                                               | 3                                                                          |                             |                                 |   |                                                                            |   |                                                                            |   |                                  |                  |
|     | (ii)                                                                                                                                                                                                                                                                                                                                                   |                                                                            |                             |                                 |   |                                                                            |   |                                                                            |   |                                  |                  |
|     |  <p>(Terima mana-mana jawapan yang munasabah)<br/>(Accept any reasonable answers)</p>                                                                                                                                                                               | 1                                                                          |                             |                                 |   |                                                                            |   |                                                                            |   |                                  |                  |

| No.     | Skema Pemarkahan<br>Marking Scheme                                                                                                            | Markah<br>Marks | Markah Total<br>Total Marks |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------|
| (b) (i) | <p>Jarak (km)<br/>Distance (km)</p> <p>Masa (jam)<br/>Time (hour)</p> <p>Saiful</p> <p>Adrian</p>                                             | 3               |                             |
| (ii)    | $\text{Laju / Speed} = \frac{140 - 110}{12 - 9}$ $= 10 \text{ km j}^{-1} / \text{km h}^{-1}$                                                  | 1<br>1<br>1     |                             |
| (iii)   | 100 km                                                                                                                                        |                 |                             |
| (c) (i) | $\text{RM}30\,000 - \text{RM}600$ $= \text{RM}29\,400$ $\text{RM}29\,400 \times \frac{20}{100} + \text{RM}600 = \text{RM}6\,480$              | 1<br>1<br>1     |                             |
| (ii)    | RM0<br>Kos rawatan RM450 adalah kurang daripada deduktibel RM600.<br><i>The treatment cost of RM450 is less than the deductible of RM600.</i> | 1<br>1          |                             |
|         |                                                                                                                                               |                 | 15                          |

**KERTAS 1**

**1 D**

$$7(-15 + 20) + \frac{3}{5} \div 2.5 = 35 + 0.24$$

$$= \frac{881}{25}$$

**2 D**

**A:** 1, 4, 9, 16, ...

$$\begin{array}{ccccccc} & +3 & +5 & +7 & & & \\ \text{A:} & 1 & 4 & 9 & 16 & & \end{array}$$

**B:** 2, 4, 6, 8, ...

$$\begin{array}{ccccccc} & +2 & +2 & +2 & & & \\ \text{B:} & 2 & 4 & 6 & 8 & & \end{array}$$

**C:** 3, 6, 9, 12, ...

$$\begin{array}{ccccccc} & +3 & +3 & +3 & & & \\ \text{C:} & 3 & 6 & 9 & 12 & & \end{array}$$

**D:** 4, 8, 16, 32, ...

$$\begin{array}{ccccccc} & \times 2 & \times 2 & \times 2 & & & \\ \text{D:} & 4 & 8 & 16 & 32 & & \end{array}$$

**3 B**

$$\frac{3^8 \times 2^4}{12} = 8\,748$$

**A:**  $3^7 \times 2 = 4\,374$

**B:**  $3^7 \times 2^2 = 8\,748$

**C:**  $3^9 \times 2^2 = 78\,732$

**D:**  $3^9 \times 2^6 = 1\,259\,712$

**4 C**

**A:** 3 029 016 = 3.03 juta / millions

**B:** 2 905 421 = 2.91 juta / millions

**C:** 4 260 572 = 4.26 juta / millions

**D:** 5 118 396 = 5.12 juta / millions

**5 D**

$$1 \times 2^3 + 1 \times 2^2 + 1 \times 2^0 = 1101_2$$

**6 A**

$$245_8 = 165_{10}$$

$$165 \times \frac{100}{60} = 275$$

$$275_{10} = 423_8$$

$$\begin{array}{r|l} 8 & 275 \\ \hline 8 & 34 \\ \hline 8 & 4 \\ \hline & 0 \end{array} \begin{array}{l} - 3 \\ - 2 \\ - 4 \\ \uparrow \end{array}$$

**7 C**

Wang pendahuluan = RM63 000 – RM50 000

Down payment

$$= \text{RM}13\,000$$

Jumlah minimum simpanan = (RM13 000 – RM10 500) ÷ 5

Minimum amount of the saving

$$= \text{RM}2\,500 \div 5$$

$$= \text{RM}500$$

8 D

Jumlah cukai pintu = kadar cukai pintu  $\times$  nilai tahunan

$$\begin{aligned}\text{Total amount of the property assessment tax} &= \text{property assessment tax rate} \times \text{annual value} \\ &= 1.5 \times 6\% \times \text{RM5 820} \\ &= \text{RM523.80}\end{aligned}$$

9 D

Premium asas = RM151.20

Basic premium

$$\text{Premium kasar} = \text{RM151.20} \times \frac{55}{100}$$

Gross premium

$$= \text{RM83.16}$$

10 D

$$\begin{aligned}(x + 3y)(y - 3x) &= xy - 3x^2 + 3y^2 - 9xy \\ &= 3y^2 - 8xy - 3x^2\end{aligned}$$

11 A

$$V = \pi r^2 h$$

$$r^2 = \frac{V}{\pi h}$$

$$r = \sqrt{\frac{V}{\pi h}}$$

12 B

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

$$OR = \frac{3}{4} (8)$$

$$OR = 6$$

$$m = -\frac{\text{pintasan-}y / y\text{-intercept}}{\text{pintasan-}x / x\text{-intercept}}$$

$$= -\frac{6}{8}$$

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

13 C

$$y = ax^2 + 9x + c$$

$$y = -x^2 + 9x - 18$$

$$y = -(x^2 - 9x + 18)$$

$$y = -(x - 3)(x - 6)$$

$$a = -1, \text{ bentuk / shape } \text{ (diagram of a downward-opening parabola) }$$

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

14 A

$2x$  lebih berat daripada  $y + 5$ .

$2x$  is heavier than  $y + 5$ .

15 C

A:  $y \leq 0$  dan  $y \geq -x$  adalah salah.

$y \leq 0$  and  $y \geq -x$  are wrong.

B:  $y \leq 0$ ,  $y \geq -x$ ,  $y < x - 3$  dan  $x < 5$  adalah salah.

$y \leq 0$ ,  $y \geq -x$ ,  $y < x - 3$  and  $x < 5$  are wrong.

D:  $y \geq -x$ ,  $y < x - 3$  dan  $x < 5$  adalah salah.

$y \geq -x$ ,  $y < x - 3$  and  $x < 5$  are wrong.

16 B

$$\begin{aligned}\text{Kadar perubahan laju} &= -\frac{v-0}{12-3} \\ \text{The rate of change of speed}\end{aligned}$$

$$-14\frac{2}{3} = -\frac{v}{9}$$

$$\frac{44}{3} = \frac{v}{9}$$

$$v = 132 \text{ m s}^{-1}$$

17 D

$$x \propto y^2$$

$$x = ky^2$$

$$\frac{2}{5} = k\left(\frac{1}{2}\right)^2$$

$$\frac{2}{5} = k\left(\frac{1}{4}\right)$$

$$k = \frac{8}{5}$$

$$x = \frac{8}{5}y^2$$

18 C

$$R \propto \frac{1}{j^2}$$

$$R = \frac{k}{j^2}$$

$$0.5 = \frac{k}{0.1^2}$$

$$k = \frac{1}{200}$$

$$R = \frac{1}{200j^2}$$

$$2 = \frac{1}{200j^2}$$

$$j^2 = \frac{1}{400}$$

$$j = \sqrt{\frac{1}{400}}$$

$$j = \frac{1}{20}$$

$$j = 0.05$$

19 A

Katakan tinggi =  $t$ ,

Let height

Katakan isi padu =  $v$ ,

Let volume

Katakan jejari =  $j$ ,

Let radius

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

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

$$7 = \frac{k(269.5)}{(3.5)^2}$$

$$k = \frac{7}{22}$$

$$t = \frac{7v}{22j^2}$$

$$21 = \frac{7v}{22j^2}$$

$$21 = \frac{7(1\,996.5)}{22j^2}$$

$$j^2 = 30.25$$

$$j = \sqrt{30.25}$$

$$j = 5.5 \text{ cm}$$

20 A

$$M + \begin{bmatrix} 4 & 6 \\ -3 & -15 \end{bmatrix} = \begin{bmatrix} 17 & -10 \\ 6 & -5 \end{bmatrix}$$

$$M = \begin{bmatrix} 17 & -10 \\ 6 & -5 \end{bmatrix} - \begin{bmatrix} 4 & 6 \\ -3 & -15 \end{bmatrix}$$

$$M = \begin{bmatrix} 17-4 & -10-6 \\ 6-(-3) & -5-(-15) \end{bmatrix}$$

$$M = \begin{bmatrix} 13 & -16 \\ 9 & 10 \end{bmatrix}$$

21 A

$$P = Q$$

$$\begin{bmatrix} 5 & x+y \\ x & z \end{bmatrix} = \begin{bmatrix} 5 & 8 \\ 6 & x-y \end{bmatrix}$$

$$x = 6$$

$$x + y = 8$$

$$6 + y = 8$$

$$y = 8 - 6$$

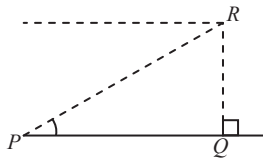
$$y = 2$$

$$z = x - y$$

$$z = 6 - 2$$

$$z = 4$$

22 A



$\angle QPR$

23 B

$$\text{Isi padu kon} = \frac{1}{3} \pi j^2 t$$

$$\text{Volume of cone} = \frac{1}{3} \pi r^2 h$$

$$\text{Isi padu hemisfera} = \frac{2}{3} \pi j^3$$

$$\text{Volume of hemisphere} = \frac{2}{3} \pi r^3$$

Isi padu gabungan pepejal

*Volume of the combined solid*

$$\begin{aligned}
 &= \frac{1}{3} \pi j^2 t + \frac{2}{3} \pi j^3 \\
 &= \frac{1}{3} \left( \frac{22}{7} \right) (3)^2 (7) + \frac{2}{3} \left( \frac{22}{7} \right) (3)^3 \\
 &= 66 + 56 \frac{4}{7} \\
 &= 122 \frac{4}{7} \text{ cm}^3
 \end{aligned}$$

24 C

$$\begin{aligned}
 x &= \angle LJN + \angle JLM \\
 &= 60^\circ + 32^\circ \\
 &= 92^\circ
 \end{aligned}$$

25 D

$P \rightarrow S$ : Pantulan / *Reflection*

$S \rightarrow R$ : Translasi / *Translation*

26 A

$$k = \frac{\text{panjang sisi imej} / \text{a side of an image}}{\text{panjang sisi objek} / \text{a side of an object}}$$

$$k = \frac{3}{6}$$

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

Arah bertentangan,  $\therefore k = -\frac{1}{2}$   
*Opposite direction*

27 C

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

$$x = -60^\circ$$

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

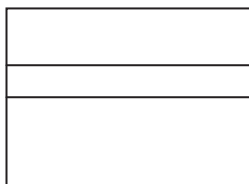
$$x = 120^\circ$$

$$\tan 60^\circ = \frac{m}{n}$$

$$m = n \tan 60^\circ$$

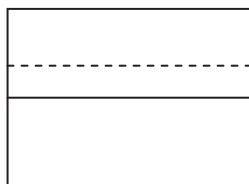
28 B

A:



← Salah / *Wrong*

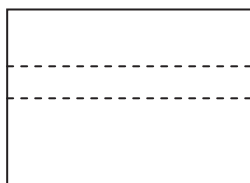
C:



← Salah / *Wrong*

← Salah / *Wrong*

D:



← Salah / Wrong

29 D

A:  $(a - b)^2 = a^2 - b^2$  (Palsu / False)

B:  $m - 7 = 4$  (Bukan pernyataan / Not a statement)

C:  $(-2)^2 = -4$  (Palsu / False)

D:  $\{3, 6, 9\} \cap \{9, 16\} = \{9\}$  (Benar / True)

30 B

|                          | Bentuk III<br>Form III                    |
|--------------------------|-------------------------------------------|
| Premis 1<br>Premise 1    | Jika $p$ , maka $q$<br>If $p$ , then $q$  |
| Premis 2<br>Premise 2    | Bukan $q$ adalah benar<br>Not $q$ is true |
| Kesimpulan<br>Conclusion | Bukan $p$ adalah benar<br>Not $p$ is true |

$p: x = 3$

$q: x + 2 = 5$

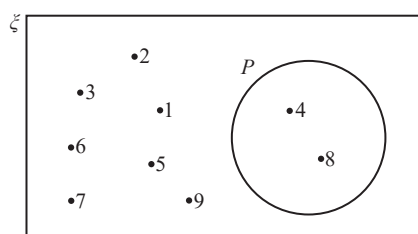
$\therefore$  Jika  $x = 3$  maka  $x + 2 = 5$

If  $x = 3$  then  $x + 2 = 5$

31 C

$\zeta = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$

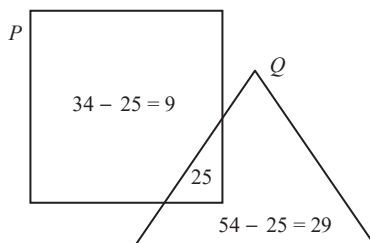
Set  $P = \{4, 8\}$



32 A

$$\begin{aligned} n(P) + n(Q) &= 34 + 54 \\ &= 88 \end{aligned}$$

$$\begin{aligned} n(P \cap Q) &= 88 - n(P \cup Q) \\ &= 88 - 63 \\ &= 25 \end{aligned}$$



33 C

$$\begin{aligned} \text{A: } P_1 \rightarrow P_2 \rightarrow P_3 \rightarrow P_7 \\ &= 70 \text{ km} + 40 \text{ km} + 30 \text{ km} \\ &= 140 \text{ km} \end{aligned}$$

$$\begin{aligned} \text{B: } P_1 \rightarrow P_2 \rightarrow P_6 \rightarrow P_7 \\ &= 70 \text{ km} + 90 \text{ km} + 60 \text{ km} \\ &= 220 \text{ km} \end{aligned}$$

$$\begin{aligned} \text{C: } P_1 \rightarrow P_4 \rightarrow P_2 \rightarrow P_7 \\ &= 40 \text{ km} + 50 \text{ km} + 80 \text{ km} \\ &= 170 \text{ km} \end{aligned}$$

$$\begin{aligned} \text{D: } P_1 \rightarrow P_4 \rightarrow P_5 \rightarrow P_7 \\ &= 40 \text{ km} + 30 \text{ km} + 50 \text{ km} \\ &= 120 \text{ km} \end{aligned}$$

34 A

$$\begin{aligned} \text{Sudut sektor} &= \frac{18.42}{9.18 + 18.42 + 1.36} \times 360^\circ \\ \text{Angle of sector} &= 229^\circ \end{aligned}$$

35 B

|                                      |   |   |   |   |
|--------------------------------------|---|---|---|---|
| <b>Skor</b><br><i>Score</i>          | 2 | 3 | 4 | 5 |
| <b>Kekerapan</b><br><i>Frequency</i> | 3 | 8 | 7 | 4 |

$$\begin{aligned} \text{Min skor baharu} &= \frac{(2 \times 3) + (3 \times 8) + (4 \times 7) + (5 \times 4)}{3 + 8 + 7 + 4} \\ \text{New mean score} &= \frac{78}{22} \\ &= 3.55 \end{aligned}$$

36 B

Kebarangkalian memilih sebiji guli bukan berwarna hijau / *Probability of choosing marble that is not green*

$$\begin{aligned} &= \frac{6 + 4}{6 + 4 + 9} \\ &= \frac{10}{19} \end{aligned}$$

37 D

Kotak Q tidak mengandungi bola biru.

*Box Q does not consist of blue balls.*

38 D

$$\begin{aligned} x + 5 + x + 2x + 3 &= 40 \\ 4x + 8 &= 40 \\ 4x &= 32 \\ x &= 8 \end{aligned}$$

$$\begin{aligned} \text{Kebarangkalian peserta mengambil bahagian dalam kedua-dua kuiz} &= \frac{8}{40} \\ \text{Probability of the participant takes part in both quizzes} &= \frac{1}{5} \end{aligned}$$

39 B

A: Titik 60 dan 80 adalah salah

*Points 60 and 80 are wrong*

C: 65 bukan median

*65 is not a median*

D: Titik 35 dan 85 adalah salah

*Points 35 and 85 are wrong*

40 B

$$\text{Persentil ke-40} = \frac{40}{100} \times 60$$

*40<sup>th</sup> percentile*

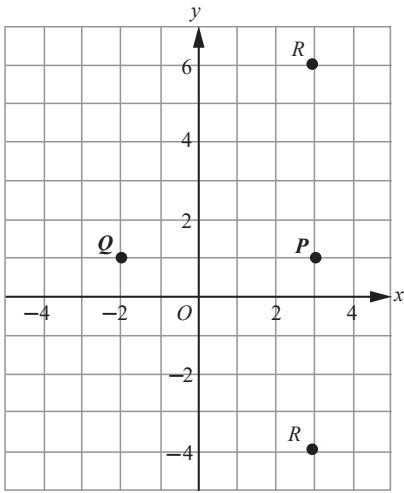
$$= 24$$

Dari graf, markah ialah 61.5.

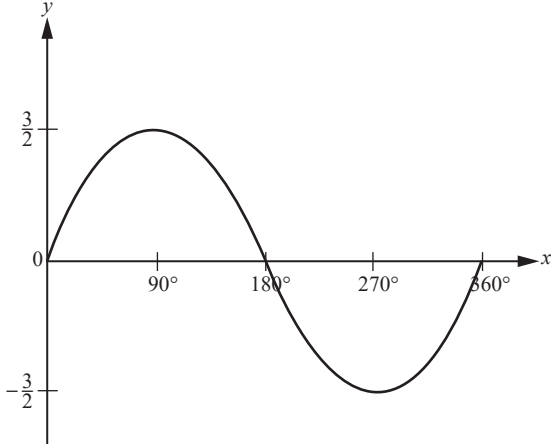
*From the graph, the marks is 61.5.*

## KERTAS 2

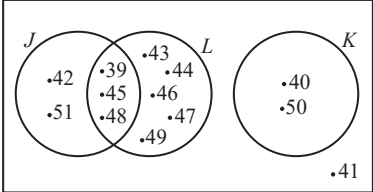
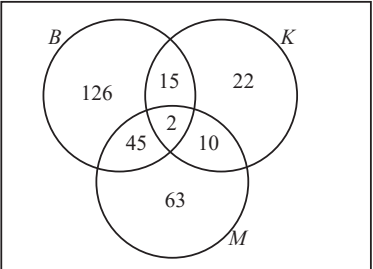
### Bahagian A

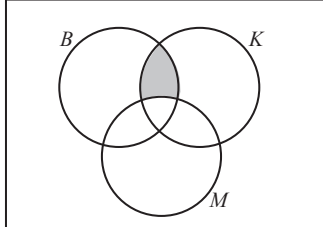
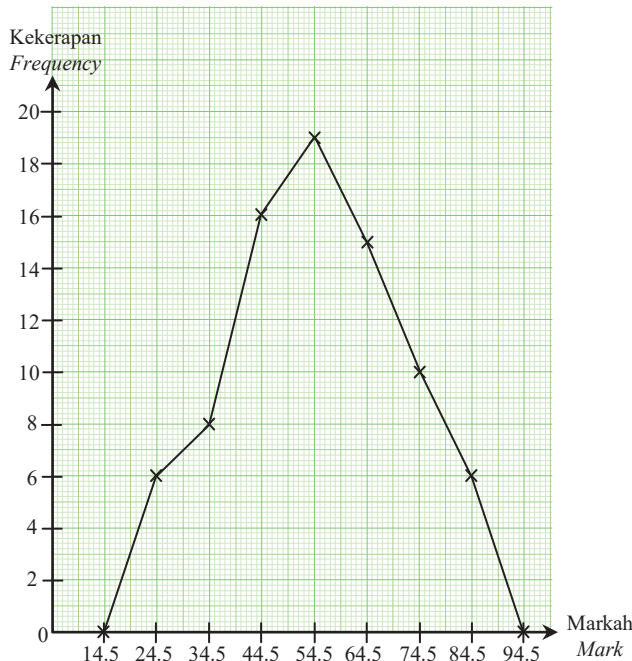
| No. | Skema Pemarkahan<br><i>Marking Scheme</i>                                                                                                                                                                                                                                                                                                                                                                            | Markah<br><i>Marks</i> | Markah Total<br><i>Total Marks</i> |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|------------------------------------|
| 1   | <p>(a)</p>  <p>R ditanda di (3, 6) atau (3, -4).<br/><i>R is marked at (3, 6) or (3, -4).</i></p> <p>(b) Jarak antara titik R dan titik Q<br/><i>Distance between points R and Q</i><br/> <math>= \sqrt{[3 - (-2)]^2 + (6 - 1)^2}</math> atau / or <math>\sqrt{[3 - (-2)]^2 + (-4 - 1)^2}</math><br/> <math>= 7.07</math> unit</p> | 1                      | 3                                  |
| 2   | <p>(a) <math>Q_1 = 5</math></p> <p>(b) Julat antara kuartil / <i>Interquartile range</i><br/> <math>= Q_3 - Q_1</math><br/> <math>= 16 - 5</math><br/> <math>= 11</math></p>                                                                                                                                                                                                                                         | 1                      |                                    |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                      | 1                      | 3                                  |

| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Markah<br>Marks                     | Markah Total<br>Total Marks |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-----------------------------|
| 3   | (a) Akas: Jika $2x - 3 = 5$ , maka $x = 4$ .<br><i>Converse: If <math>2x - 3 = 5</math>, then <math>x = 4</math>.</i>                                                                                                                                                                                                                                                                                                                                                                   | 1                                   | 4                           |
|     | Kontrapositif: Jika $2x - 3 \neq 5$ , maka $x \neq 4$ .<br><i>Contrapositive: If <math>2x - 3 \neq 5</math>, then <math>x \neq 4</math>.</i>                                                                                                                                                                                                                                                                                                                                            | 1                                   |                             |
|     | (b) $8(n)^2 - 4$ , $n = 1, 2, 3, 4, \dots$                                                                                                                                                                                                                                                                                                                                                                                                                                              | 2                                   |                             |
| 4   | (a) Y: Menilai kedudukan kewangan.<br><i>Evaluating financial status.</i>                                                                                                                                                                                                                                                                                                                                                                                                               | 1                                   | 4                           |
|     | (b) Aliran tunai / <i>Cash flow</i><br>$= \text{RM}8\,500 + \text{RM}1\,200 - \left(\frac{12}{100} \times 8\,500\right) - \text{RM}4\,350 - \text{RM}3\,610$<br>$= \text{RM}720$                                                                                                                                                                                                                                                                                                        | 2<br>1                              |                             |
| 5   | $\left[\frac{1}{2}(50 + QP)(24)\right] - (10 \times 8) = 628$ $600 + 12QP = 708$ $QP = 9 \text{ m}$                                                                                                                                                                                                                                                                                                                                                                                     | 2                                   | 3                           |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1                                   |                             |
| 6   | (a) $\frac{80}{100} \times 300\,000 = 240\,000$<br><br>Bayaran pampasan / <i>Amount of compensation</i><br>$= \frac{\text{Jumlah insurans yang telah dibeli}}{\text{Jumlah insurans yang harus dibeli}} \times \text{Jumlah kerugian} - \text{Deduktibel}$<br>$= \frac{\text{Amount of insurance purchased}}{\text{Amount of insurance to be purchased}} \times \text{Total loss} - \text{Deductible}$<br>$= \frac{200\,000}{240\,000} \times 30\,000 - 2\,500$<br>$= \text{RM}22\,500$ | 1<br><br><br><br><br><br><br>1<br>1 | 4                           |
|     | (b) Penalti ko-insurans / <i>Co-insurance penalty</i><br>$= 30\,000 - \left(\frac{200\,000}{240\,000} \times 30\,000\right)$<br>$= \text{RM}5\,000$                                                                                                                                                                                                                                                                                                                                     | <br><br><br><br>1                   |                             |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                     |                             |
| 7   | Luas kolam renang – Luas bahagian kanak-kanak = Luas bahagian dewasa<br><i>Area of the swimming pool – Area of children's section = Area of adults' section</i><br><br>$\left[(7x - 2)\left(2 \times \frac{5}{2}x\right)\right] - 12\frac{4}{7} = 107\frac{3}{7}$ $35x^2 - 10x - 120 = 0$ $(7x + 12)(x - 2) = 0$ $x = -\frac{12}{7} \text{ atau / or } x = 2$ $\therefore x = 2$                                                                                                        | 1<br><br>1<br>1<br>1                | 4                           |
| 8   | Katakan pelitup muka = $m$<br><i>Let face mask = <math>m</math></i><br><br>Katakan pensanitasi tangan = $k$<br><i>Let hand sanitizer = <math>k</math></i><br><br>$3m + 4k = 148.40$<br><br>$2(2m + 6k) = 301.20$<br>$4m + 12k = 301.20$                                                                                                                                                                                                                                                 | 1                                   |                             |

| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Markah<br>Marks                     | Markah Total<br>Total Marks |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-----------------------------|
|     | $\begin{bmatrix} 3 & 4 \\ 4 & 12 \end{bmatrix} \begin{bmatrix} m \\ k \end{bmatrix} = \begin{bmatrix} 148.40 \\ 301.20 \end{bmatrix}$ $\begin{bmatrix} m \\ k \end{bmatrix} = \frac{1}{(3)(12) - (4)(4)} \begin{bmatrix} 12 & -4 \\ -4 & 3 \end{bmatrix} \begin{bmatrix} 148.40 \\ 301.20 \end{bmatrix}$ $\begin{bmatrix} m \\ k \end{bmatrix} = \frac{1}{20} \begin{bmatrix} (12 \times 148.40) + (-4 \times 301.20) \\ (-4 \times 148.40) + (3 \times 301.20) \end{bmatrix}$ $\begin{bmatrix} m \\ k \end{bmatrix} = \frac{1}{20} \begin{bmatrix} 576 \\ 310 \end{bmatrix}$ $\begin{bmatrix} m \\ k \end{bmatrix} = \begin{bmatrix} 28.8 \\ 15.5 \end{bmatrix}$ <p><math>m = \text{RM}28.80</math><br/> <math>k = \text{RM}15.50</math></p> | <p>1</p> <p>1</p> <p>1</p> <p>1</p> | 5                           |
| 9   | <p>(a) (i) <math>M' = (3, 0)</math></p> <p>(ii) Putaran lawan arah jam pada pusat <math>(-4, 2)</math>.<br/> <i>Anticlockwise rotation at centre <math>(-4, 2)</math>.</i></p> <p>atau / or</p> <p>Putaran ikut arah jam pada pusat <math>(1, -7)</math>.<br/> <i>Clockwise rotation at centre <math>(1, -7)</math>.</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                  | <p>1</p> <p>2</p>                   | 5                           |
|     | <p>(b) Translasi / Translation <math>\begin{pmatrix} 11 \\ 11 \end{pmatrix}</math></p> <p>atau / or</p> <p>Pantulan pada garis <math>y = -x</math>.<br/> <i>Reflection on line <math>y = -x</math>.</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <p>2</p>                            |                             |
| 10  | <p>(a)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <p>2</p>                            | 5                           |
|     | <p>(b) (i) <math>PR = \sqrt{30^2 + 15^2}</math><br/> <math>= 33.54 \text{ cm}</math></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <p>1</p> <p>1</p>                   |                             |
|     | <p>(ii) <math>\cos / \cos y^\circ = \frac{30}{33.54}</math> (Sukuan / <i>Quadrant II</i>)<br/> <math>\cos / \cos y^\circ = -0.89</math></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <p>1</p>                            |                             |

# Bahagian B

| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                                                                                                                                                                         | Markah<br>Marks                     | Markah Total<br>Total Marks |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-----------------------------|
| 11  | <p>(a) (i) <math>2y = -3x + 8</math><br/> <math>y = -\frac{3}{2}x + 4</math><br/> <math>m = -\frac{3}{2}</math></p> <p>(ii) <math>2(0) = -3x + 8</math><br/> <math>x = \frac{8}{3}</math><br/> <math>\therefore</math> Pintasan-<math>x</math> / <math>x</math>-intercept <math>= \frac{8}{3}</math></p>                                                                                                   | <p>1</p> <p>1</p> <p>1</p>          | 8                           |
|     | <p>(b) (i) <math>m = \frac{3-2}{0-(-2)}</math><br/> <math>= \frac{1}{2}</math><br/> <math>y = mx + c</math><br/> <math>y = \frac{1}{2}x + 3</math><br/> <math>y = \frac{1}{2}(8) + 3</math><br/> <math>y = 7</math><br/> Koordinat zoo / The coordinates of zoo <math>= (8, 7)</math></p> <p>(ii) <math>7 = -\frac{1}{4}(8) + c</math><br/> <math>c = 9</math><br/> <math>y = -\frac{1}{4}x + 9</math></p> | <p>1</p> <p>1</p> <p>1</p> <p>1</p> |                             |
| 12  | <p>(a) (i) <math>J = \{39, 42, 45, 48, 51\}</math><br/> <math>L = \{39, 43, 44, 45, 46, 47, 48, 49\}</math></p> <p>(ii) <math>\zeta</math></p>                                                                                                                                                                          | <p>1</p> <p>1</p> <p>3</p>          | 8                           |
|     | <p>(b) (i) <math>\zeta</math></p>  <p>(ii) Bilangan responden yang tidak memilih sebarang syarikat penerbangan<br/> Number of respondents who do not choose any airlines<br/> <math>= 300 - 126 - 15 - 22 - 2 - 45 - 10 - 63</math><br/> <math>= 17</math></p>                                                          | <p>2</p> <p>1</p> <p>1</p>          |                             |

| No.                    | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                                                                                                                                                             | Markah<br>Marks        | Markah Total<br>Total Marks |   |   |    |    |    |    |   |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   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|                        | <p>(iii) <math>\zeta</math></p> <div></div> <p><math>(B \cap K) \cap M' = 15</math></p>                                                                                                                                                                                                                       | 1                      | 10                          |   |   |    |    |    |    |   |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    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| 13                     | <p>(a) (i)</p> <table><thead><tr><th>Kekerapan<br/>Frequency</th></tr></thead><tbody><tr><td>0</td></tr><tr><td>6</td></tr><tr><td>8</td></tr><tr><td>16</td></tr><tr><td>19</td></tr><tr><td>15</td></tr><tr><td>10</td></tr><tr><td>6</td></tr><tr><td>0</td></tr></tbody></table> <p>(ii)</p> <div></div> | Kekerapan<br>Frequency | 0                           | 6 | 8 | 16 | 19 | 15 | 10 | 6 | 0 | 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| 19                     |                                                                                                                                                                                                                                                                                                                                                                                                |                        |                             |   |   |    |    |    |    |   |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   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| 15                     |                                                                                                                                                                                                                                                                                                                                                                                                |                        |                             |   |   |    |    |    |    |   |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   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| 10                     |                                                                                                                                                                                                                                                                                                                                                                                                |                        |                             |   |   |    |    |    |    |   |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   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| 6                      |                                                                                                                                                                                                                                                                                                                                                                                                |                        |                             |   |   |    |    |    |    |   |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   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| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                 | Markah<br>Marks | Markah Total<br>Total Marks |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------|
| 14  | (a) $x + y \leq 210$<br>$x \geq 2y$                                                                                                                                                                                                                | 1<br>1          |                             |
|     | (b)                                                                                                                                                                                                                                                | 4               |                             |
|     | (c) (i) Bilangan maksimum murid sekolah menengah = 165<br><i>The maximum number of secondary school students</i>                                                                                                                                   | 1               |                             |
|     | (ii) Jumlah yuran minimum yang diterima penganjur<br><i>Total minimum fees received by the organiser</i><br>= $(90 \times \text{RM}150) + (45 \times \text{RM}120)$<br>= RM18 900                                                                  | 1<br>1          |                             |
| 15  | (a) Pendapatan bercukai Encik Farqan / <i>Encik Farqan's chargeable income</i><br>= RM77 600 – RM12 600 – RM9 000 – RM3 360 – RM2 500<br>= RM50 140                                                                                                | 1<br>1          |                             |
|     | (b) Cukai pendapatan / <i>Income tax</i><br>= $\text{RM}1\,800 + \left[ (\text{RM}50\,140 - \text{RM}50\,000) \times \frac{13}{100} \right] - \text{RM}840$<br>= $\text{RM}1\,800 + \text{RM}18.20 - \text{RM}840$<br>= RM978.20                   | 2<br>1          |                             |
|     | (c) (i) Potongan cukai bulanan (PCB) pada tahun tersebut<br><i>Monthly tax deduction (PCB) in that year</i><br>= $\text{RM}120 \times 12$<br>= RM1 440<br><br>Tidak perlu, RM1 440 melebihi RM978.20.<br><i>No need, RM1 440 exceeds RM978.20.</i> | 1<br>1          |                             |
|     | (ii) LHDN perlu memulangkan lebih kepada Encik Farqan.<br><i>IRB should refund the excess deduction to Encik Farqan.</i>                                                                                                                           | 1               |                             |

# Bahagian C

| No.                                                                                                                                                                                                                                                  | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                             | Markah<br>Marks | Markah Total<br>Total Marks |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------|
| 16                                                                                                                                                                                                                                                   | (a) (i) $15 : 18 = 5 : 6$                                                                                                                                                                                                      | 1               |                             |
|                                                                                                                                                                                                                                                      | (ii) $18x + 15(14) = 390$<br>$18x = 390 - 210$<br>$x = \frac{180}{18}$<br>$x = 10$                                                                                                                                             | 1               |                             |
|                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                | 1               |                             |
|                                                                                                                                                                                                                                                      | (b) (i)                                                                                                                                                                                                                        | 3               |                             |
|                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                |                 |                             |
|                                                                                                                                                                                                                                                      | (ii) Laju van / Speed of the van $= \frac{30 - 0}{50 - 30}$<br>$= \frac{3}{2} \text{ km min}^{-1}$                                                                                                                             |                 |                             |
|                                                                                                                                                                                                                                                      | $\frac{23(2) + 24(2) + 26(3) + 28(4) + 30(2) + 32(2) + 35(2) + 36(4) + 38(3)}{2 + 2 + 3 + 4 + 2 + 2 + 2 + 4 + 3}$                                                                                                              | 2               |                             |
|                                                                                                                                                                                                                                                      | (c) Min / Mean $= \frac{23(2) + 24(2) + 26(3) + 28(4) + 30(2) + 32(2) + 35(2) + 36(4) + 38(3)}{2 + 2 + 3 + 4 + 2 + 2 + 2 + 4 + 3}$<br>$= 30 \frac{2}{3}$                                                                       | 1               |                             |
|                                                                                                                                                                                                                                                      | $\therefore$ Setuju dengan kenyataan pemain tersebut.<br>Agree with the player's statement.                                                                                                                                    | 1               |                             |
|                                                                                                                                                                                                                                                      | (d) Kebarangkalian pasukan lelaki $= \left(\frac{2}{5} \times \frac{7}{15}\right) + \left(\frac{3}{5} \times \frac{8}{15}\right) + \left(\frac{2}{5} \times \frac{8}{15}\right)$<br>Probability of boys team $= \frac{54}{75}$ | 1               |                             |
| Kebarangkalian pasukan perempuan $= \left(\frac{3}{7} \times \frac{5}{8}\right) + \left(\frac{4}{7} \times \frac{3}{8}\right) + \left(\frac{3}{7} \times \frac{3}{8}\right)$<br>Probability of girls team $= \frac{36}{56}$                          | 1                                                                                                                                                                                                                              |                 |                             |
| Kedua-dua pasukan lelaki dan perempuan berpeluang ke peringkat seterusnya kerana kedua-dua kebarangkalian melebihi $\frac{3}{5}$ .<br>Both boys and girls team get the chance to the next stage because both the probability exceeds $\frac{3}{5}$ . | 1                                                                                                                                                                                                                              |                 |                             |
| 17                                                                                                                                                                                                                                                   | (a) (i) $25 \text{ km j}^{-1} / \text{km h}^{-1}$                                                                                                                                                                              | 1               |                             |
|                                                                                                                                                                                                                                                      | (ii) Jarak yang dilalui $= \frac{1}{2} \times 25 \times 0.5$<br>Distance travelled $= 6.25 \text{ km}$                                                                                                                         | 1               |                             |
|                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                | 1               |                             |



**KERTAS 1**

**1 D**

- A:**  $-0.32, -0.16, -0.8, -0.4, \dots$   
 $-0.32 \div 2 = -0.16$   
 $-0.16 \div 2 = -0.08$  (salah / *wrong*)
- B:**  $21, 63, 126, 387, \dots$   
 $21 \times 3 = 63$   
 $63 \times 3 = 189$  (salah / *wrong*)
- C:**  $92, 88, 84, 79, \dots$   
 $92 - 4 = 88$   
 $88 - 4 = 84$   
 $84 - 4 = 80$  (salah / *wrong*)
- D:**  $100, 116, 132, 148, \dots$   
 $100 + 16 = 116$   
 $116 + 16 = 132$   
 $132 + 16 = 148$  (betul / *correct*)

**2 B**

$$\begin{aligned} \text{RM}120 - 3 \times \text{RM}15 &= \text{RM}120 - \text{RM}45 \\ &= \text{RM}75 \\ 100\% - 25\% &= 75\% \\ \text{Harga selepas diskaun / Price after discount} \\ &= \frac{75}{100} \times \text{RM}40 \\ &= \text{RM}30 \\ 2 \times \text{RM}30 &= \text{RM}60 \\ 3 \times \text{RM}30 &= \text{RM}90 \end{aligned}$$

$\therefore$  Jumlah maksimum kek keju yang boleh dibeli ialah 2 biji.  
*The maximum number of cheesecake that he can buy is 2.*

**3 D**

$$\begin{aligned} \text{Jumlah luas 16 keping jubin} &= 16 \times 80 \text{ cm} \times 65 \text{ cm} \\ \text{Total area of 16 tiles} \\ &= 83\,200 \text{ cm}^2 \\ &= 8.32 \times 10^4 \end{aligned}$$

**4 C**

$$\begin{aligned} A &= P + Prt \\ &= 100\,000 + \left(100\,000 \times \frac{4.18}{100} \times 8\right) \\ &= 133\,440 \\ \text{Ansuran bulanan / Monthly instalment} \\ &= \frac{133\,440}{8 \times 12} \\ &= \text{RM}1\,390 \end{aligned}$$

**5 D**

$$\begin{aligned} &1 \times 5^5 + 4 \times 5^3 + 2 \times 5^1 \\ &= (1 \times 5^5) + (0 \times 5^4) + (4 \times 5^3) + (0 \times 5^2) + (2 \times 5^1) + (0 \times 5^0) \\ &= 104020_5 \end{aligned}$$

6 B

$$220002_3$$

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

$$= 650$$

$$\frac{6}{100} \times 650 = 39$$

$$\begin{array}{r|l} 4 & 39 \\ \hline 4 & 9 - 3 \uparrow \\ \hline 4 & 2 - 1 \uparrow \\ \hline & 0 - 2 \uparrow \end{array}$$

$$39_{10} = 213_4$$

7 D

Cukai jalan: kereta

Road tax: car

Cukai pendapatan: pendapatan tahunan

Income tax: annual income

Cukai pintu: banglo

Property assessment tax: a bungalow

8 C

Cukai pintu / Property assessment tax

$$= \frac{1}{2} \times \text{RM}5\,880 \times \frac{5}{100}$$

$$= \text{RM}147$$

9 A

Premium asas / Basic premium

$$= \text{RM}243.90 + \text{RM}20.30 \times \left( \frac{120\,000 - 1\,000}{1\,000} \right)$$

$$= \text{RM}2\,659.60$$

Premium kasar / Gross premium

$$= \text{RM}2\,659.60 \times (100\% - 45\%)$$

$$= \text{RM}2\,659.60 \times \left( \frac{55}{100} \right)$$

$$= \text{RM}1\,462.78$$

10 C

$$3 - 2x \leq 1$$

$$-2x \leq 1 - 3$$

$$-2x \leq -2$$

$$x \geq 1$$

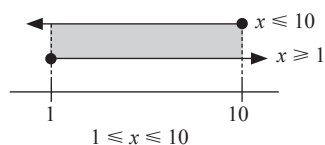
$$4x - 3 \leq 37$$

$$4x \leq 37 + 3$$

$$4x \leq 40$$

$$x \leq 10$$

$$\therefore 1 \leq x \leq 10$$



11 B

$$\begin{aligned}F &= \frac{9}{5}C + 32 \\19.04 &= \frac{9}{5}C + 32 \\-12.96 &= \frac{9}{5}C \\C &= -7.2\end{aligned}$$

12 C

$$45 \text{ minit / minutes} \times \frac{1 \text{ jam / hour}}{60 \text{ minit / minutes}} = 0.75 \text{ jam / hour}$$

$$\begin{aligned}\text{Jarak / Distance} &= 96 \frac{\text{km / j}}{\text{km / h}} \times 2.75 \text{ jam / hours} \\&= 264 \text{ km}\end{aligned}$$

$$15 \text{ minit / minutes} \times \frac{1 \text{ jam / hour}}{60 \text{ minit / minutes}} = 0.25 \text{ jam / hour}$$

$$\begin{aligned}\text{Laju purata / Average speed} &= \frac{264 \text{ km}}{2.25 \text{ j / h}} \\&= 117.33 \frac{\text{km / j}}{\text{km / h}}\end{aligned}$$

13 A

$$\begin{aligned}f(x) &= -2(x+1)(x-3) \\f(0) &= -2(0+1)(0-3) \\f(0) &= -2(1)(-3) \\f(0) &= 6\end{aligned}$$

$$x = -1, \quad x = 3$$

$$a = -2 < 0, \quad \cap$$

14 B

Katakan / Let  $x$  = lelaki / boys

Katakan / Let  $y$  = perempuan / girls

$$x + y \leq 36$$

$$x \geq 3y$$

$$x \geq 3(6)$$

$$x \geq 18 \text{ (minimum)}$$

$$36 - 6 = 30 \left( \begin{array}{c} \text{maksimum} \\ \text{maximum} \end{array} \right)$$

15 D

A:  $2y \leq x$

B:  $x + y \leq 180$

C: Bilangan maksimum ban sardin ialah 120 biji.

*The maximum number of sardine buns is 120.*

D: Bilangan maksimum ban kacang ialah 60 biji.

*The maximum number of bean buns is 60.*

**16 C**

*RS: Bergerak pada arah sama dan laju berkurang.*

*Moves in the same direction and speed decreases.*

Masa dari  $Q$  ke  $R$  / Time from  $Q$  to  $R$

$$= 18 \text{ minit / minutes} - 8 \text{ minit / minutes}$$

$$= 10 \text{ minit / minutes}$$

*QR: Bergerak dengan laju seragam selama 10 minit.*

*Moves at a uniform speed for 10 minutes.*

**17 B**

$$\text{Laju / Speed} = \frac{\text{Jarak / Distance}}{\text{Masa / Time}}$$

$$4 = \frac{y - 10}{20 - 0}$$

$$80 = y - 10$$

$$y = 90$$

**18 A**

$$M = \frac{12}{L}$$

$$6 = \frac{12}{2}$$

$$6 = 6$$

$$M = \frac{12}{L}$$

$$4 = \frac{12}{3}$$

$$4 = 4$$

**19 A**

$$P \propto \frac{Q^2}{R}$$

$$P = \frac{kQ^2}{R}$$

$$18 = \frac{k(3)^2}{2}$$

$$36 = k(9)$$

$$k = 4$$

$$P = \frac{4Q^2}{R}$$

$$10 = \frac{4(4)^2}{R}$$

$$R = \frac{64}{10}$$

$$R = \frac{32}{5}$$

**20 B**

$$P = \begin{bmatrix} 1 & 2 & 3 \\ 2 & -3 & 4 \\ -1 & 0 & 6 \\ 3 & 7 & 2 \\ 6 & 3 & 11 \end{bmatrix} \begin{matrix} 1 \\ 2 \\ 3 \\ 4 \end{matrix}$$

$$4 \times 3, P_{23} = 6$$

21 A

$$\begin{bmatrix} x & -1 \\ 4 & 1 \end{bmatrix} - 3 \begin{bmatrix} -\frac{1}{3} & -\frac{1}{6} \\ -2 & -\frac{2}{3} \end{bmatrix} + \begin{bmatrix} -8 & 1 \\ -1 & -5 \end{bmatrix} = \begin{bmatrix} -5 & \frac{1}{2} \\ 3 & y \end{bmatrix}$$

$$\begin{bmatrix} x & -1 \\ 4 & 1 \end{bmatrix} - \begin{bmatrix} -1 & -\frac{1}{2} \\ -6 & -2 \end{bmatrix} + \begin{bmatrix} -8 & 1 \\ -1 & -5 \end{bmatrix} = \begin{bmatrix} -5 & \frac{1}{2} \\ 3 & y \end{bmatrix}$$

$$x - (-1) + (-8) = -5$$

$$x + 1 - 8 = -5$$

$$x - 7 = -5$$

$$x = -5 + 7$$

$$x = 2$$

$$1 - (-2) + (-5) = y$$

$$1 + 2 - 5 = y$$

$$y = -2$$

22 A

$$QR : PS = \frac{1}{5} : \frac{1}{4}$$

$$\frac{QR}{PS} = \frac{\left(\frac{1}{5}\right)}{\left(\frac{1}{4}\right)}$$

$$\frac{QR}{15} = \frac{4}{5}$$

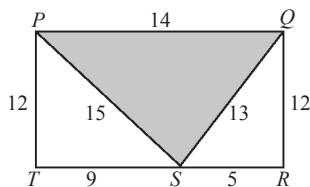
$$QR = 12$$

$$RS : QR = \frac{1}{12} : \frac{1}{5}$$

$$\frac{RS}{QR} = \frac{\left(\frac{1}{12}\right)}{\left(\frac{1}{5}\right)}$$

$$\frac{RS}{12} = \frac{5}{12}$$

$$RS = 5$$



$$QS = \sqrt{5^2 + 12^2}$$

$$QS = 13$$

$$TS = \sqrt{15^2 - 12^2}$$

$$TS = 9$$

$$PQ = 9 + 5$$

$$PQ = 14$$

$$PQ + PS + QS$$

$$= 14 + 15 + 13$$

$$= 42$$

23 C

Sudut pedalaman / Interior angle

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

$$= \frac{(6-2) \times 180^\circ}{6}$$

$$= 120^\circ$$

$$\angle STV = 120^\circ - 40^\circ$$

$$= 80^\circ$$

$$\angle TVR = 360^\circ - 80^\circ - 120^\circ - 50^\circ$$

$$= 110^\circ$$

$$\angle TVU = 180^\circ - 40^\circ - 40^\circ$$

$$= 100^\circ$$

$$x = 360^\circ - 110^\circ - 100^\circ$$

$$= 150^\circ$$

24 B

$$4x^\circ + \frac{x^\circ}{2} = 180^\circ$$

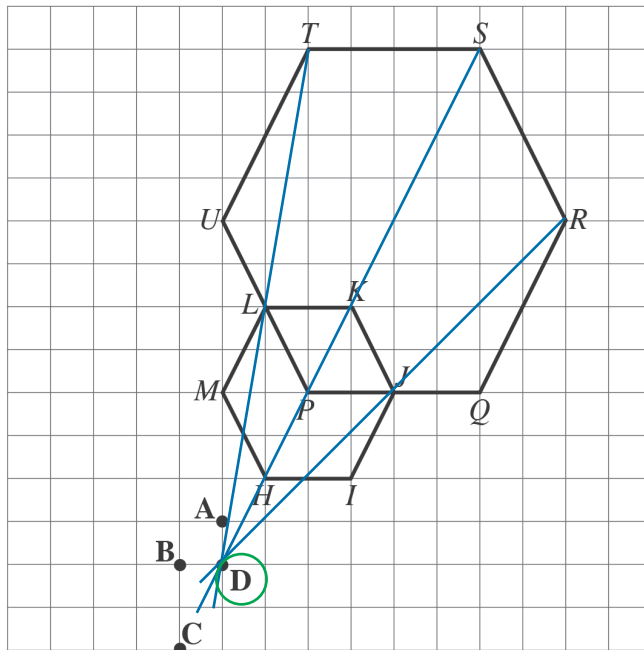
$$8x^\circ + x^\circ = 360^\circ$$

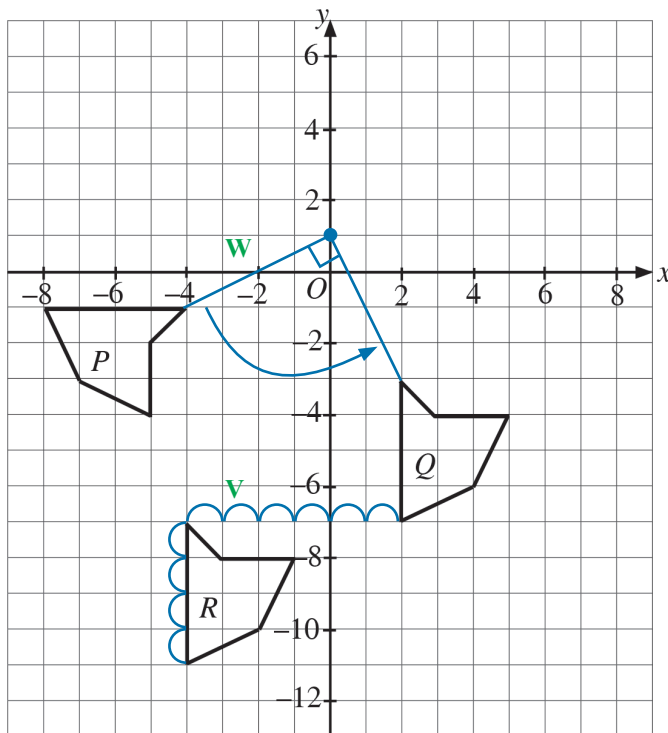
$$9x^\circ = 360^\circ$$

$$x^\circ = \frac{360^\circ}{9}$$

$$x^\circ = 40^\circ$$

25 D

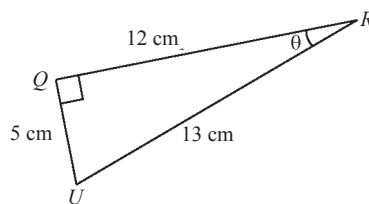




27 A

$$\begin{aligned} QR &= 4RS \\ &= 4(3) \\ &= 12 \text{ cm} \end{aligned}$$

$$\begin{aligned} QU &= \sqrt{13^2 - 12^2} \\ &= 5 \text{ cm} \end{aligned}$$



$$\begin{aligned} \tan x^\circ &= -\theta \\ &= -\frac{5}{12} \end{aligned}$$

28 A

A:  $y = \cos / \cos \frac{3}{2}x, c = 1$

B:  $y = -\cos / \cos \frac{3}{2}x, c = -1$

C:  $y = \sin \frac{3}{2}x, c = 1$

D:  $y = -\sin \frac{3}{2}x, c = -1$

29 C

A: Palsu atau benar = benar  
*False or true = true*

B: Benar atau palsu = benar  
*True or false = true*

C: Benar dan palsu = palsu  
*True and false = false*

D: Benar dan benar = benar  
*True and true = true*

30 C

$p: k = 7$

$q: 2k - 11 = 3$

Kontrapositif: Jika  $\sim q$ , maka  $\sim p$ .

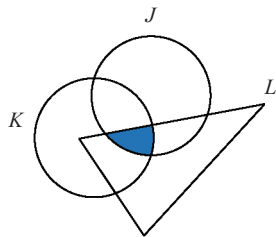
Contrapositive: If  $\sim q$ , then  $\sim p$ .

$\therefore$  Jika  $2k - 11 \neq 3$ , maka  $k \neq 7$

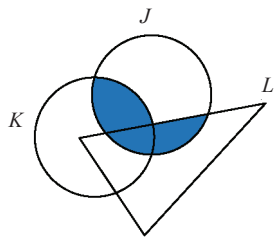
If  $2k - 11 \neq 3$ , then  $k \neq 7$

31 D

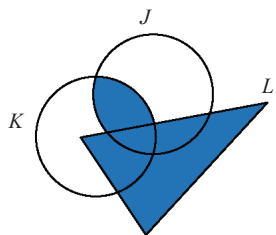
A:  $K \cap L \cap J$



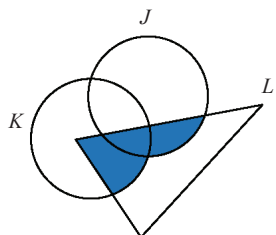
B:  $(K \cup L) \cap J$



C:  $(K \cap J) \cup L$



D:  $(K \cup J) \cap L$



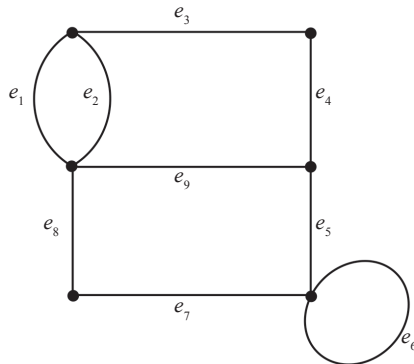
32 C

$$\begin{aligned}n(P) &= n(R) \\ y + 3 + x &= 3 + x + 2 + 4 \\ y &= 6\end{aligned}$$

$$\begin{aligned}y - x &= 1 \\ 6 - x &= 1 \\ -x &= -5 \\ x &= 5\end{aligned}$$

$$\begin{aligned}n(P \cup Q) &= y + 3 + x + 2 \\ n(P \cup Q) &= 6 + 3 + 5 + 2 \\ n(P \cup Q) &= 16\end{aligned}$$

33 A



$$\begin{aligned}E &= \{e_1, e_2, e_3, e_4, e_5, e_6, e_7, e_8, e_9\} \\ n(E) &= 9\end{aligned}$$

$$\begin{aligned}\text{Jumlah darjah / Sum of degree} \\ \sum d(v) &= 2(E) \\ &= 2(9) \\ &= 18\end{aligned}$$

34 B

| Jenama<br><i>Brand</i> | Jumlah jualan enam<br>bulan pertama<br><i>Total sales in the first six<br/>months</i> | Jumlah jualan enam<br>bulan terakhir<br><i>Total sales in the last six<br/>months</i> | Jumlah<br><i>Total</i> |
|------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|------------------------|
| <i>Q</i>               | 150                                                                                   | 600                                                                                   | 750                    |
| <i>R</i>               | 250                                                                                   | 750                                                                                   | 1 000                  |
| <i>S</i>               | 250                                                                                   | 500                                                                                   | 750                    |
| <i>T</i>               | 350                                                                                   | 0                                                                                     | 350                    |

35 C

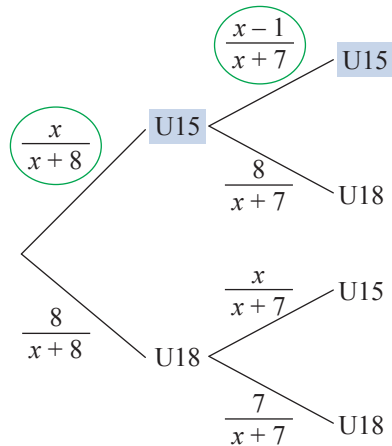
$$\begin{aligned}10 + x &= 11 + 5 + 4 \\ x &= 20 - 10 \\ x &= 10\end{aligned}$$

36 B

$$Q_1 = 22, \quad Q_3 = 71$$

$$\begin{aligned} \text{Julat antara kuartil / Interquartile range} \\ &= 71 - 22 \\ &= 49 \end{aligned}$$

37 D



$$\frac{x}{x+8} \times \frac{x-1}{x+7} = \frac{5}{17}$$

$$\frac{x^2 - x}{x^2 + 15x + 56} = \frac{5}{17}$$

$$17x^2 - 17x = 5x^2 + 75x + 280$$

$$12x^2 - 92x - 280 = 0$$

$$3x^2 - 23x - 70 = 0$$

$$(x - 10)(3x + 7) = 0$$

$$x = 10, x = -\frac{7}{3} \text{ (abaikan / ignore)}$$

$$\begin{aligned} \text{Jumlah ahli pasukan badminton sekolah / Total number of badminton team members} \\ &= 10 + 8 + 7 + 15 \\ &= 40 \end{aligned}$$

38 C

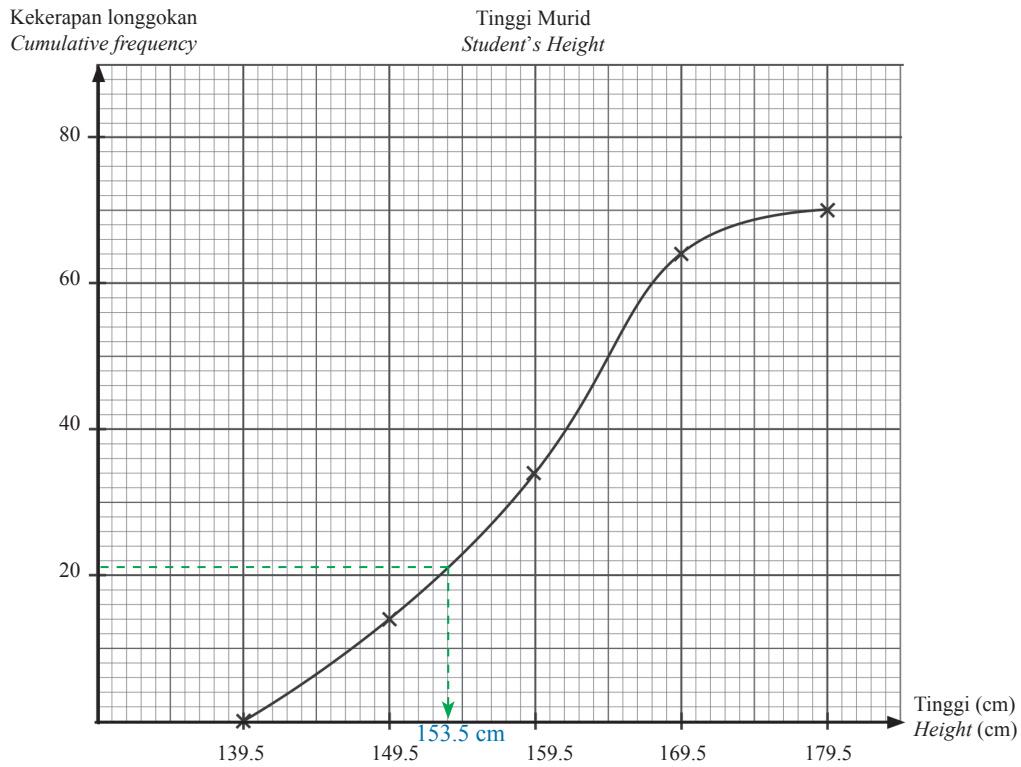
$$\begin{aligned} P(L, L) + P(P, P) &= \left(\frac{10}{24} \times \frac{9}{23}\right) + \left(\frac{14}{24} \times \frac{13}{23}\right) \\ &= \frac{34}{69} \end{aligned}$$

39 D

$$\begin{aligned} \sigma^2 &= \frac{\sum fx^2}{\sum f} - \bar{x}^2 \\ &= \frac{107.98}{100} - \left(\frac{100.4}{100}\right)^2 \end{aligned}$$

40 A

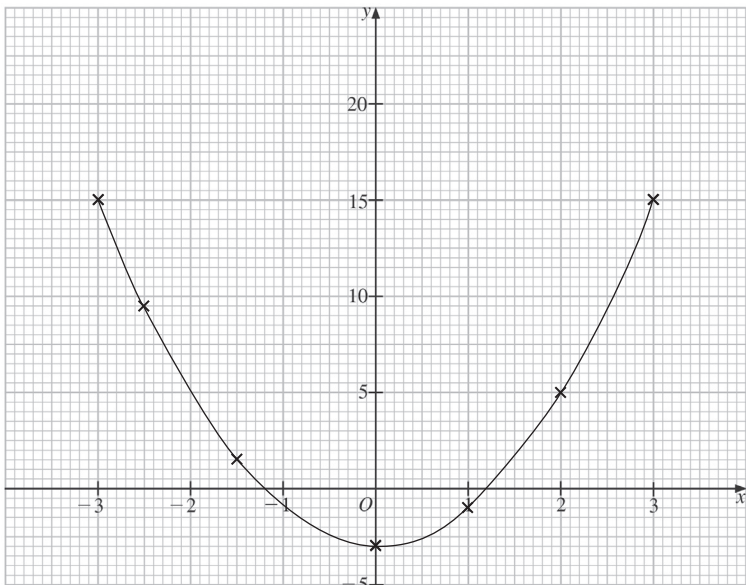
$$\begin{aligned}\text{Persentil ke-30} &= \frac{30}{100} \times 70 \\ 30^{\text{th}} \text{ percentile} &= 21\end{aligned}$$

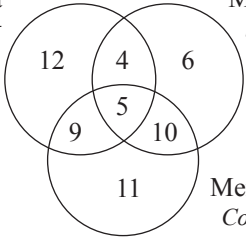
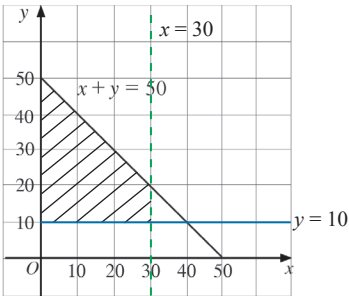


Dari graf, tinggi ialah 153.5 cm.

From the graph, the height is 153.5 cm.

**KERTAS 2**
**Bahagian A**

| No.                                                                                                                                                                                                                                                                                      | Skema Pemarkahan<br>Marking Scheme                                                                                                                                           | Markah<br>Marks | Markah Total<br>Total Marks |      |   |   |   |     |     |    |   |   |   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------|------|---|---|---|-----|-----|----|---|---|---|
| 1                                                                                                                                                                                                                                                                                        | (a) 12                                                                                                                                                                       | 1               | 3                           |      |   |   |   |     |     |    |   |   |   |
|                                                                                                                                                                                                                                                                                          | (b) 46                                                                                                                                                                       | 1               |                             |      |   |   |   |     |     |    |   |   |   |
|                                                                                                                                                                                                                                                                                          | (c) Nilai maksimum ialah 54 minit.<br>The maximum value is 54 minutes.                                                                                                       | 1               |                             |      |   |   |   |     |     |    |   |   |   |
| 2                                                                                                                                                                                                                                                                                        | (a) <table border="1"><tr><td>x</td><td>-2.5</td><td>-1.5</td><td>1</td><td>2</td></tr><tr><td>y</td><td>9.5</td><td>1.5</td><td>-1</td><td>5</td></tr></table>              | x               | -2.5                        | -1.5 | 1 | 2 | y | 9.5 | 1.5 | -1 | 5 | 1 | 3 |
|                                                                                                                                                                                                                                                                                          | x                                                                                                                                                                            | -2.5            | -1.5                        | 1    | 2 |   |   |     |     |    |   |   |   |
| y                                                                                                                                                                                                                                                                                        | 9.5                                                                                                                                                                          | 1.5             | -1                          | 5    |   |   |   |     |     |    |   |   |   |
| (b)  <p>– Empat titik diplot dengan tepat.<br/>Four points are plotted precisely.</p> <p>– Graf lengkung yang licin dan berterusan dilukis.<br/>A graph of a smooth and continuous curve is drawn.</p> | 1<br>1                                                                                                                                                                       |                 |                             |      |   |   |   |     |     |    |   |   |   |
| 3                                                                                                                                                                                                                                                                                        | $\text{Kecerunan} = \frac{4-2}{3-0}$ $\text{Gradient} = \frac{2}{3}$ $y = mx + c$ $-1 = \left(\frac{2}{3}\right)(1) + c$ $c = -\frac{5}{3}$ $y = \frac{2}{3}x - \frac{5}{3}$ | 1<br>1<br>1     | 3                           |      |   |   |   |     |     |    |   |   |   |
| 4                                                                                                                                                                                                                                                                                        | (a) Cuka epal mempunyai nilai pH < 7.<br>Apple vinegar has a pH value < 7.                                                                                                   | 1               |                             |      |   |   |   |     |     |    |   |   |   |

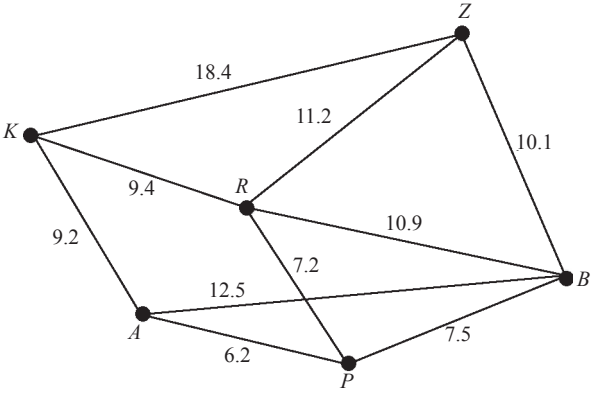
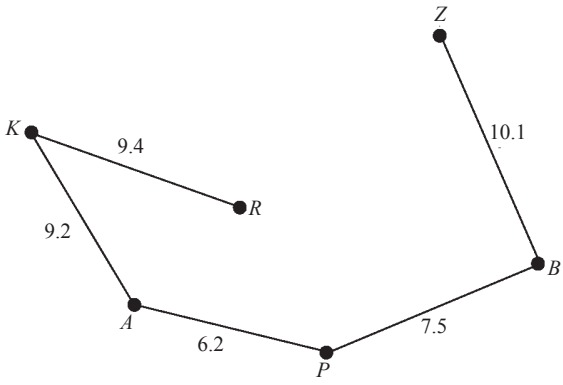
| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                                                                                                                                                                                                     | Markah<br>Marks                     | Markah Total<br>Total Marks |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-----------------------------|
|     | <p>(b) (i) <math>915 - 600 = 315</math><br/> <math>600 - 315 = 285</math><br/> <math>y = 315x + 285, x = 1, 2, 3, 4, 5, \dots</math></p> <p>(ii) <math>y = 315x + 285</math><br/> <math>3\,500 = 315x + 285</math><br/> <math>x = 10.21</math><br/> <math>x = 11</math> bulan / months</p>                                                                                                                                             | <p>2</p> <p>1</p> <p>1</p>          | 5                           |
| 5   | <p>(a) Mewarna<br/>Colouring</p>  <p>(b) (i) <math>12 + 6 + 11 = 29</math><br/> (ii) <math>12 + 4 + 6 + 10 + 11 = 43</math></p>                                                                                                                                                                                                                       | <p>2</p> <p>1</p> <p>1</p> <p>1</p> | 5                           |
| 6   | <p>(a) Laju seragam<br/>Constant speed</p> <p>(b) <math>\frac{1}{2}(17 + 13)(10) + \frac{1}{2}(25)(17)</math><br/> <math>= 362.5</math></p>                                                                                                                                                                                                                                                                                            | <p>1</p> <p>2</p> <p>1</p>          | 4                           |
| 7   | <p>(a) Tidak, kerana nilai deduktibel adalah lebih tinggi daripada kos rawatan.<br/>No, because the deductible value is higher than the cost of treatment.</p> <p>(b) <math>\frac{15}{100}(29\,900 - 1\,500) + 1\,500</math><br/> <math>= \text{RM}5\,760</math></p>                                                                                                                                                                   | <p>1</p> <p>2</p> <p>1</p>          | 4                           |
| 8   | <p>(a) <math>y \geq 10</math></p> <p>(b)</p>  <p>– Garis <math>x = 30</math> dilukis dengan betul.<br/>The <math>x = 30</math> line is drawn correctly.</p> <p>– Garis <math>y = 10</math> dilukis dengan betul.<br/>The <math>y = 10</math> line is drawn correctly.</p> <p>– Rantau dilorek dengan betul.<br/>The region is correctly shaded.</p> | <p>1</p> <p>1</p> <p>1</p>          | 4                           |

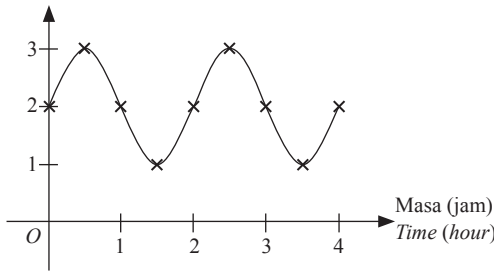
| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                            | Markah<br>Marks | Markah Total<br>Total Marks |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------|
| 9   | (a) Ya / Yes<br>$AB = BC$                                                                                                                                                                                                                     | 1               | 4                           |
|     | (b) Pembesaran pada pusat (3, 2) dengan faktor skala $-\frac{1}{2}$ .<br><i>Enlargement at center (3, 2) with a scale factor of <math>-\frac{1}{2}</math>.</i>                                                                                | 3               |                             |
| 10  | (a) Salah, kerana Puan Ilham tidak perlu menolak rebat cukai.<br><i>Wrong, because Puan Ilham does not need to subtract tax rebate.</i>                                                                                                       | 1               | 5                           |
|     | (b) Pendapatan bercukai / <i>Chargeable income</i><br>= RM69 200 – RM18 500 – RM470<br>= RM50 230<br><br>Cukai pendapatan / <i>Income tax</i><br>= RM1 800 – (RM50 230 – RM50 000) $\times \left(\frac{13}{100}\right)$ – 1 260<br>= RM569.90 | 1               |                             |
|     |                                                                                                                                                                                                                                               | 2               |                             |
|     |                                                                                                                                                                                                                                               | 1               |                             |

### Bahagian B

| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                                     | Markah<br>Marks | Markah Total<br>Total Marks |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------|
| 11  | (a) Jangka pendek dan jangka panjang<br><i>Short term and long term</i>                                                                                                | 1               | 8                           |
|     | (b) (i) RM4 322 + RM500 – (RM900 + RM600 + RM200) – (RM180 + RM550 + RM350 + RM200)<br>= RM1 842<br>Aliran tunai positif.<br><i>Positive cash flow.</i>                | 1               |                             |
|     |                                                                                                                                                                        | 1               |                             |
|     | (ii) (a) $\frac{10\,850 + 13\,000}{12} - 1\,842$<br>= RM145.50                                                                                                         | 1               |                             |
|     |                                                                                                                                                                        | 1               |                             |
|     | (b) – Mengurangkan perbelanjaan makanan dan minuman.<br><i>Reduce food and drinks expenses.</i>                                                                        | 1               |                             |
|     | – Mengurangkan belanja petrol dengan menggunakan pengangkutan awam.<br><i>Reduce petrol expenses by using public transport.</i>                                        | 1               |                             |
|     |                                                                                                                                                                        |                 |                             |
| 12  | (a) (i) Saiz selang kelas / <i>Class interval</i> : 10<br>Julat / <i>Range</i> : $\left[\left(\frac{130 + 139}{2}\right) - \left(\frac{70 + 79}{2}\right)\right] = 60$ | 1               |                             |
|     |                                                                                                                                                                        | 1               |                             |
|     | (ii) $x = 68 - 2 - 4 - 3 - 8 - 14 - 20$<br>= 17                                                                                                                        | 1               |                             |
|     |                                                                                                                                                                        | 1               |                             |

| No.     | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                                                                                      | Markah<br>Marks | Markah Total<br>Total Marks |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------|
| (b)     | <p>Bilangan pelanggan<br/>Number of customer</p> <p>Jumlah perbelanjaan (RM)<br/>Total expenditure (RM)</p> <p>– 7 titik diplot dengan betul.<br/>7 points are plotted correctly.</p> <p>– 9 titik yang betul dilalui oleh poligon kekerapan.<br/>The correct 9 points are passed through by the frequency polygon.</p> | 2<br>1          | 10                          |
| (c) (i) | – Bentuk loceng<br>Bell-shaped                                                                                                                                                                                                                                                                                          | 1               |                             |
|         | – Pencong ke kiri<br>Left-skewed                                                                                                                                                                                                                                                                                        | 1               |                             |
| (ii)    | Hari kedua. Pelanggan membelanjakan lebih banyak wang.<br>Second day. Customers spent more money.                                                                                                                                                                                                                       | 1               |                             |
| 13      | (a) (i) Mendaki / Hiking<br>(ii) Pandian                                                                                                                                                                                                                                                                                | 1<br>1          |                             |

| No.     | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                                              | Markah<br>Marks | Markah Total<br>Total Marks |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------|
| (b) (i) |  <p>– 10 tepi dilukis dengan betul.<br/>10 edges are drawn correctly</p> <p>– Semua pemberat dilabel dengan betul.<br/>All weightages are labelled correctly.</p>                              | 2<br>1          |                             |
| (ii)    |  <p>– 5 tepi dilukis dengan betul.<br/>5 edges are drawn correctly.</p> <p>– Semua pemberat dilabel dengan betul.<br/>All weightages are labelled correctly.</p>                              | 1<br>1          |                             |
| (iii)   | <p><math>10.1 + 7.5 + 6.2 + 9.2 = 33 \text{ km}</math><br/> <math>11.2 + 7.2 + 6.2 + 9.2 = 33.8 \text{ km}</math></p> <p><math>Z \rightarrow B \rightarrow P \rightarrow A \rightarrow K</math><br/> <math>Z \rightarrow R \rightarrow P \rightarrow A \rightarrow K</math></p> | 1<br>1          | 9                           |

| No.                                                                                                                                                                                                                                                                                                                                          | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Markah<br>Marks | Markah Total<br>Total Marks |     |     |     |     |     |     |   |     |   |   |   |   |   |   |   |   |   |   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------|-----|-----|-----|-----|-----|-----|---|-----|---|---|---|---|---|---|---|---|---|---|
| 14                                                                                                                                                                                                                                                                                                                                           | (a) (i) 1<br>(ii) $3 - 1 = 2$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1<br>1          |                             |     |     |     |     |     |     |   |     |   |   |   |   |   |   |   |   |   |   |
|                                                                                                                                                                                                                                                                                                                                              | (b) (i) $b = \frac{360}{4}$<br>$= 90$<br><br>$y = a \sin bx + c$<br>$y = (1) \sin (90)x + 2$<br>$y = \sin 90x + 2$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1<br><br>1      |                             |     |     |     |     |     |     |   |     |   |   |   |   |   |   |   |   |   |   |
|                                                                                                                                                                                                                                                                                                                                              | (ii) $y = \sin 90\left(\frac{150}{60}\right) + 2$<br>$y = 1.29$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1               |                             |     |     |     |     |     |     |   |     |   |   |   |   |   |   |   |   |   |   |
|                                                                                                                                                                                                                                                                                                                                              | (c) (i) <table border="1"><tr><td>x</td><td>0</td><td>0.5</td><td>1</td><td>1.5</td><td>2</td><td>2.5</td><td>3</td><td>3.5</td><td>4</td></tr><tr><td>y</td><td>2</td><td>3</td><td>2</td><td>1</td><td>2</td><td>3</td><td>2</td><td>1</td><td>2</td></tr></table><br>$b = \frac{360}{2} = 180$<br>$y = \sin 180x + 2$<br><br>Kedalaman (m)<br>Depth (m)<br><br><br>Graf dilengkapi dengan 2 titik minimum, 2 titik maksimum dan lengkung sinus yang betul.<br>The graph is completed with 2 minimum points, 2 maximum points and 2 sine curves correctly. | x               |                             | 0   | 0.5 | 1   | 1.5 | 2   | 2.5 | 3 | 3.5 | 4 | y | 2 | 3 | 2 | 1 | 2 | 3 | 2 | 1 |
| x                                                                                                                                                                                                                                                                                                                                            | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.5             | 1                           | 1.5 | 2   | 2.5 | 3   | 3.5 | 4   |   |     |   |   |   |   |   |   |   |   |   |   |
| y                                                                                                                                                                                                                                                                                                                                            | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 3               | 2                           | 1   | 2   | 3   | 2   | 1   | 2   |   |     |   |   |   |   |   |   |   |   |   |   |
| (ii) Rajah 8 menunjukkan bilangan melepaskan air dalam masa 4 jam ialah satu kali manakala rajah di (c)(i) menunjukkan bilangan melepaskan air dalam masa 4 jam ialah dua kali.<br>Diagram 8 shows the number of water releases in 4 hours is one time whereas diagram in (c)(i) shows the number of water releases in 4 hours is two times. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                 |                             |     |     |     |     |     |     |   |     |   |   |   |   |   |   |   |   |   |   |
| 15                                                                                                                                                                                                                                                                                                                                           | (a) $x + 3 = -1$<br>$x = -4$<br><br>$5y = -2$<br>$y = -\frac{2}{5}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1<br><br>1      |                             |     |     |     |     |     |     |   |     |   |   |   |   |   |   |   |   |   |   |

| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                       | Markah<br>Marks | Markah Total<br>Total Marks |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------|
|     | (b) (i) $3x + 2y = 55$<br>$4x + 3y = 55 + 20$<br>$4x + 3y = 75$                                                                                          | 1               |                             |
|     | $\begin{bmatrix} 3 & 2 \\ 4 & 3 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 55 \\ 75 \end{bmatrix}$                             | 1               |                             |
|     | $\begin{bmatrix} x \\ y \end{bmatrix} = \frac{1}{(3)(3) - (2)(4)} \begin{bmatrix} 3 & -2 \\ -4 & 3 \end{bmatrix} \begin{bmatrix} 55 \\ 75 \end{bmatrix}$ | 1               |                             |
|     | $\begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} (3 \times 55) + (-2 \times 75) \\ (-4 \times 55) + (3 \times 75) \end{bmatrix}$                  |                 |                             |
|     | $\begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 15 \\ 5 \end{bmatrix}$                                                                           |                 |                             |
|     | Sekotak sushi / A box of sushi = RM15                                                                                                                    | 1               |                             |
|     | Seketul ayam goreng / A piece of fried chicken = RM5                                                                                                     | 1               |                             |
|     | (ii) $15 \times \frac{80}{100} = \text{RM}12$                                                                                                            | 1               |                             |
|     | $5 \times \frac{60}{100} = \text{RM}3$                                                                                                                   |                 |                             |
|     | $[2 \ 8] \begin{bmatrix} 12 \\ 3 \end{bmatrix} = \text{RM}48$                                                                                            | 1               |                             |
|     | Dia mempunyai wang cukup kerana hanya RM48 diperlukan.<br>She has enough money as only RM48 is needed.                                                   | 1               | 10                          |

### Bahagian C

| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                         | Markah<br>Marks | Markah Total<br>Total Marks |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------|
| 16  | (a) (i) Segi tiga bersudut tegak<br>Right-angled triangle                                                                                                  | 1               |                             |
|     | (ii) $\sqrt{2.5^2 + 6^2}$<br>$= 6.5$                                                                                                                       | 1               |                             |
|     |                                                                                                                                                            | 1               |                             |
|     | (b) $\frac{3}{5} \times \frac{5}{9} + \frac{2}{5} \times \frac{4}{9} + \frac{3}{5} \times \frac{4}{9}$<br>$= \frac{7}{9}$                                  | 2               |                             |
|     |                                                                                                                                                            | 1               |                             |
|     | (c) $f(x) = -\frac{13}{200}x^2 + \frac{39}{20}x$<br>$x = -\frac{b}{2a}$<br>$= -\frac{\left(\frac{39}{20}\right)}{2\left(-\frac{13}{200}\right)}$<br>$= 15$ | 1               |                             |
|     |                                                                                                                                                            | 1               |                             |
|     | $f(15) = -\frac{13}{200}(15)^2 + \frac{39}{20}(15)$<br>$= 14.625$                                                                                          | 1               |                             |
|     |                                                                                                                                                            | 1               |                             |
|     |                                                                                                                                                            |                 |                             |

| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Markah<br>Marks | Markah Total<br>Total Marks |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------|
|     | <p>Tinggi maksimum / <i>Maximum height</i><br/> <math>= 14.625 \text{ m} + 1.2 \text{ m}</math><br/> <math>= 15.825 \text{ m}</math><br/> <math>= 15.83 \text{ m}</math></p>                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1               | 15                          |
|     | <p>(d) <math>\bar{x} = \frac{19(6) + 21(7) + 24(8) + 6(9) + 2(10)}{19 + 21 + 24 + 6 + 2}</math><br/> <math>= 7.319</math></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1               |                             |
|     | <p>Zarif menunjukkan prestasi yang baik secara purata.<br/> <i>Zarif performs better on average.</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1               |                             |
|     | <p><math>\sigma = \sqrt{\frac{19(6)^2 + 21(7)^2 + 24(8)^2 + 6(9)^2 + 2(10)^2}{19 + 21 + 24 + 6 + 2} - 7.319^2}</math><br/> <math>= 1.042</math></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1               |                             |
|     | <p>Syafi lebih konsisten.<br/> <i>Syafi is more consistent.</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1               |                             |
| 17  | <p>(a) (i) <math>a &lt; 0</math></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1               |                             |
|     | <p>(ii) <math>x = \frac{8}{2}</math><br/> <math>= 4</math></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1               |                             |
|     | <p>Koordinat titik maksimum / <i>Coordinates of the maximum point</i><br/> <math>= (4, 5)</math></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1               |                             |
|     | <p>(b) <math>\bar{x} = \frac{5(17) + 3(22) + 6(27) + 2(32)}{5 + 3 + 6 + 2}</math><br/> <math>= 23.56</math></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1               |                             |
|     | <p><math>\sigma = \sqrt{\frac{5(17)^2 + 3(22)^2 + 6(27)^2 + 2(32)^2}{5 + 3 + 6 + 2} - 23.56^2}</math><br/> <math>= 5.23</math></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1               |                             |
|     | <p>(c) Jejari / <i>Radius</i> <math>= \frac{10}{2}</math><br/> <math>= 5</math></p> <p>Isi padu hemisfera / <i>Volume of hemisphere</i> <math>= \frac{1}{2} \times \frac{4}{3} \times \frac{22}{7} \times 5^3</math><br/> <math>= \frac{5\,500}{21} \text{ cm}^3</math></p> <p>Isi padu silinder / <i>Volume of cylinder</i> <math>= \frac{22}{7} \times 5^2 \times 4 \times 5</math><br/> <math>= \frac{11\,000}{7} \text{ cm}^3</math></p> <p>Isi padu kon / <i>Volume of cone</i><br/> <math>= \frac{1}{3} \times \frac{22}{7} \times 5^2 \times 5</math><br/> <math>= \frac{2\,750}{21} \text{ cm}^3</math></p> |                 |                             |

| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Markah<br>Marks | Markah Total<br>Total Marks |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------|
|     | <p>Isi padu botol roket / <i>Volume of rocket bottle</i></p> $= \frac{5\,500}{21} + \frac{11\,000}{7} + \frac{2\,750}{21}$ $= \frac{13\,750}{7} \text{ cm}^3$ <p>Isi padu air / <i>Volume of water</i></p> $= \frac{1}{3} \times \frac{13\,750}{7}$ $= \frac{13\,750}{21} \text{ cm}^3$ <p>Isi padu air di bahagian silinder / <i>Volume of water in a cylinder part</i></p> $= \frac{13\,750}{21} \text{ cm}^3 - \frac{2\,750}{21} \text{ cm}^3$ $= \frac{11\,000}{21} \text{ cm}^3$ $\frac{22}{7} \times 5^2 \times (h - 5) = \frac{11\,000}{21}$ $h - 5 = \frac{11\,000}{21} \div \frac{550}{7}$ $h = \frac{20}{3} + 5$ $h = 11\frac{2}{3}$                                     | 2               | 15                          |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1               |                             |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1               |                             |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1               |                             |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1               |                             |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1               |                             |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1               |                             |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1               |                             |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1               |                             |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1               |                             |
|     | <p>(d) <math>l = \frac{u^2}{g}(2 \sin \theta \cos \theta) / \frac{u^2}{g}(2 \sin \theta \cos \theta)</math></p> $l = \frac{20^2}{10}(2 \sin 30^\circ \cos 30^\circ) / \frac{20^2}{10}(2 \sin 30^\circ \cos 30^\circ)$ $l = 40 \left( 2 \times \frac{1}{2} \times \frac{\sqrt{3}}{2} \right)$ $l = 20\sqrt{3} \text{ m}$ $l = \frac{20^2}{10}(2 \sin 45^\circ \cos 45^\circ) / \frac{20^2}{10}(2 \sin 45^\circ \cos 45^\circ)$ $l = 40 \left( 2 \times \frac{1}{\sqrt{2}} \times \frac{1}{\sqrt{2}} \right)$ $l = 40 \text{ m}$ <p><math>\therefore</math> Sudut pelancaran terbaik ialah <math>45^\circ</math>.<br/> <i>The best launching angle is <math>45^\circ</math>.</i></p> | 1               |                             |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1               |                             |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1               |                             |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1               |                             |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1               |                             |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1               |                             |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1               |                             |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1               |                             |

**KERTAS 1**

**1 A**

$$11001_2 + 10111_2 = 110000_2$$

**2 B**

$$\text{RM}225 - \text{RM}15 = \text{RM}210$$

$$\begin{array}{r|l} 7 & 210 \\ \hline 7 & 30 - 0 \uparrow \\ \hline 7 & 4 - 2 \\ \hline & 0 - 4 \end{array}$$

$$\therefore 420_7$$

**3 D**

$$\begin{aligned} \frac{m^2 \times n^{-3}}{m^{-4} \times n^2} &= m^{2-(-4)} n^{-3-2} \\ &= m^6 n^{-5} \end{aligned}$$

**4 A**

$$\frac{3}{2}, \frac{7}{4}, 2, x, \frac{5}{2}, y, \dots = \frac{6}{4}, \frac{7}{4}, \frac{8}{4}, x, \frac{10}{4}, y, \dots$$

$$x = \frac{9}{4}, y = \frac{11}{4}$$

$$\begin{aligned} x + y &= \frac{9}{4} + \frac{11}{4} \\ &= 5 \end{aligned}$$

**5 C**

$$\text{Panjang kubus} = \sqrt[3]{1\,728}$$

*Length of cube*

$$= 12 \text{ m}$$

$$\text{Luas permukaan} = 6 \times (12 \text{ m})^2$$

*Surface area*

$$= 864 \text{ m}^2$$

**6 C**

$$\text{Gaji Zali pada bulan Jun / Zali's salary in June} = \left( \frac{10}{100} \times 8\,000 \right) + 8\,000$$

$$= \text{RM}8\,800$$

$$\text{Aliran tunai / Cash flow} = 8\,800 - 1\,000 - 1\,200 - 400 - 1\,000 - 1\,500 - 650 - 600 - 700$$

$$= \text{RM}1\,750$$

**7 B**

$$\text{RM}184.50 \times 2 = \text{RM}7\,380 \times \frac{R}{100}$$

$$\frac{R}{100} = 0.05$$

$$R = 5$$

Kadar cukai pintu,  $R = 5\%$

*Property assessment tax, R*

8 B

A: Kereta Ben dicuri (Polisi Pihak Ketiga, Kebakaran dan Kecurian)

*Ben's car was stolen (Third Party, Fire and Theft Policy)*

C: Kos baik pulih kereta Ben akibat kemalangan (Polisi Komprehensif)

*The repair cost of Ben's car due to accident (Comprehensive Policy)*

D: Kereta Ben terbakar akibat kebocoran tangki minyak (Polisi Komprehensif)

*Ben's car caught on fire caused by fuel tank leakage (Comprehensive Policy)*

9 D

$$\begin{aligned}\text{NCD } 45\% &= \frac{45}{100} \times \text{RM}135 \\ &= \text{RM}60.75\end{aligned}$$

Amaun insurans / *Amount of insurance*

$$= \text{RM}135 - \text{RM}60.75$$

$$= \text{RM}74.25$$

10 C

$$\begin{aligned}2 - \frac{3}{4}m &= 2m - 2 \\ 2m + \frac{3}{4}m &= 2 + 2 \\ \frac{11}{4}m &= 4 \\ m &= \frac{16}{11}\end{aligned}$$

11 D

$$\begin{aligned}\frac{k+2}{k} - \frac{1-k}{3k} &= \frac{3k+6-1+k}{3k} \\ &= \frac{4k+5}{3k}\end{aligned}$$

12 C

$$\begin{aligned}10 &= \sqrt{(9-x)^2 + (8-0)^2} \\ (9-x)^2 + (8-0)^2 &= 100 \\ (9-x)^2 + 64 &= 100 \\ (9-x)^2 &= 36 \\ 9-x &= \pm 6 \\ 9-x &= 6 \quad , \quad 9-x = -6 \\ x &= 3 \quad , \quad x = 15\end{aligned}$$

Nilai  $x$  perlu lebih kecil daripada 9.

*The value of  $x$  should less than 9.*

13 D

A:  $f(x) = x^2 + 2x + 8$  (bentuk graf adalah  $-x^2$  / *graph shape is  $-x^2$* )

B:  $f(x) = x^2 - 2x + 8$  (bentuk graf adalah  $-x^2$  / *graph shape is  $-x^2$* )

C:  $f(x) = -x^2 + 2x + 8$  (nilai  $x$  untuk fungsi kuadratik ini ialah  $-2$  dan  $4$  / *the value of  $x$  for this quadratic function is  $-2$  and  $4$* )

14 A

B:  $60x + 75y \geq 330$  (sekurang-kurangnya / *at least*)

C:  $60x + 75y < 330$  (kurang daripada / *less than*)

D:  $60x + 75y > 330$  (lebih daripada / *greater than*)

15 B

$$\begin{aligned}\text{Laju purata / Average speed} &= \frac{120 \text{ km}}{2 \text{ j/h}} \\ &= 60 \text{ km j}^{-1} / \text{km h}^{-1}\end{aligned}$$

16 C

$$\begin{aligned}\text{Nyahpecutan / Deceleration} &= \frac{20 \text{ m s}^{-1}}{15 - 10 \text{ s}} \\ &= \frac{20 \text{ m s}^{-1}}{5 \text{ s}} \\ &= 4 \text{ m s}^{-2}\end{aligned}$$

17 A

$$\begin{aligned}F &= kx \\ k &= \frac{F}{x} \\ &= \frac{2}{10} \\ &= \frac{1}{5} \\ F &= \frac{1}{5}x \\ &= \frac{1}{5}(15) \\ &= 3 \text{ N}\end{aligned}$$

18 B

$$\begin{aligned}p &\propto \frac{1}{\sqrt{w}} \\ p &= \frac{k}{\sqrt{w}} \\ k &= p\sqrt{w} \\ &= 4\sqrt{9} \\ &= 4(3) \\ &= 12 \\ p &= \frac{12}{\sqrt{w}}\end{aligned}$$

19 C

$$\begin{aligned}r &\propto \frac{S}{t^3} \\ r &= \frac{kS}{t^3} \\ k &= \frac{rt^3}{S} \\ &= \frac{6(2)^3}{4} \\ &= 12\end{aligned}$$

$$r = \frac{12s}{t^3}$$

$$3 = \frac{12m}{8^3}$$

$$12m = (3)(8)^3$$

$$12m = 1\,536$$

$$m = 128$$

20 A

$$\begin{aligned} & 2 \begin{bmatrix} 2 & 3 \\ 1 & 2 \end{bmatrix} - \begin{bmatrix} 4 & -7 \\ -1 & 3 \end{bmatrix} + \begin{bmatrix} -1 & 4 \\ 5 & 2 \end{bmatrix} \\ &= \begin{bmatrix} 4 & 6 \\ 2 & 4 \end{bmatrix} - \begin{bmatrix} 4 & -7 \\ -1 & 3 \end{bmatrix} + \begin{bmatrix} -1 & 4 \\ 5 & 2 \end{bmatrix} \\ &= \begin{bmatrix} -1 & 17 \\ 8 & 3 \end{bmatrix} \end{aligned}$$

21 D

$$\frac{-13 + x}{3} = -3$$

$$-13 + x = -9$$

$$x = 4$$

$$4y - x = 20$$

$$4y - 4 = 20$$

$$4y = 24$$

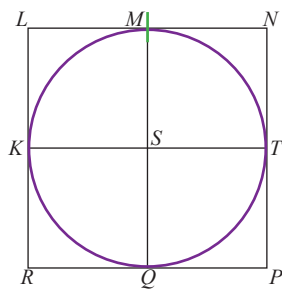
$$y = 6$$

22 B

$$\begin{aligned} \text{Sudut pedalaman pentagon} &= \frac{(5 - 2) \times 180^\circ}{5} \\ \text{Interior angle of pentagon} &= 108^\circ \end{aligned}$$

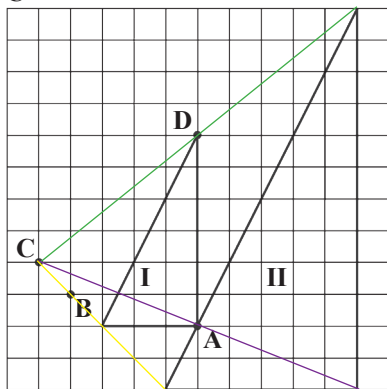
$$\begin{aligned} x &= 180^\circ - 72^\circ - 50^\circ \\ &= 58^\circ \end{aligned}$$

23 A



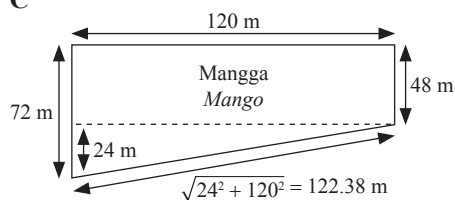
*M* berada tepat 2 m dari *S* dan terletak di atas *S* secara menegak di antara titik *L* dan titik *N*.  
*M is exactly 2 m from S and is located vertically above S, between point L and point N.*

24 C



Lukis garisan panjang yang menyambungkan bucu setiap objek dengan pasangan imej.  
*Draw long lines connecting the corners of each object with the image pair.*

25 C



Panjang pagar yang diperlukan / *The length of the fence needed*  
 $= 72 \text{ m} + 120 \text{ m} + 48 \text{ m} + 122.38 \text{ m}$   
 $= 362.38 \text{ m}$

26 A

B: Ditolak kerana translasi untuk paksi-x sepatutnya bergerak 10 langkah ke kanan.

*Rejected because the translation for the x-axis should move 10 steps to the right.*

C: Ditolak kerana U bergerak dahulu sebelum V dan pergerakan pada paksi-x adalah salah.

*Rejected because U moved first before V and movement at x-axis are wrong.*

D: Ditolak kerana U bergerak dahulu sebelum V.

*Rejected because U moved first before V.*

27 D

Koordinat P / *Coordinates P* (0.57, 0.82)

$\cos \theta = 0.57$

$\sin \theta = 0.82$

$\theta$  di sukuan kedua /  $\theta$  in second quadrant

$\theta = 180^\circ - 55^\circ$

$= 125^\circ$

$\cos (125^\circ) = -\cos (55^\circ)$

$= -0.57$

28 D

A: Kedudukan Q bukan berada pada -0.5 pada paksi-y.

*The position of Q is not at -0.5 on y-axis.*

B: Kedudukan Q bukan berada pada -0.5 pada paksi-y.

*The position of Q is not at -0.5 on y-axis.*

C:  $y = \sin -0.5 \neq 225^\circ$

29 C

A: Jawapan ini untuk “kontrapositif”.

*This answer is for “contrapositive”.*

B: Jawapan ini untuk “implikasi”.

*This answer is for “implication”.*

D: Jawapan ini untuk “akas”.

*This answer is for “converse”.*

30 D

$$\begin{aligned}V &= \frac{1}{3} \pi j^2 t / \pi r^2 h \\&= \frac{1}{3} \pi (3)^2 (7) \\&= 21\pi\end{aligned}$$

Susunan ke-6 = 13 kon

*6<sup>th</sup> arrangement = 13 cones*

$$\begin{aligned}\text{Isi padu / Volume} &= 13 \times 21\pi \\&= 273\pi\end{aligned}$$

31 B

$$\begin{aligned}P \cap R' &= \{a, b, c, d, e\} \cap \{a, b, c\} \\&= \{a, b, c\}\end{aligned}$$

32 B

$$\begin{aligned}n(S \cup M) &= n(S) + n(M) - n(S \cap M) \\29 &= 18 + 15 - n(S \cap M) \\n(S \cap M) &= 33 - 29 \\n(S \cap M) &= 4\end{aligned}$$

33 B

Darjah B / Degree of B: 3

Darjah L / Degree of L: 2

Darjah K / Degree of K: 3

Darjah H / Degree of H: 4

Darjah D / Degree of D: 3

Darjah G / Degree of G: 3

Darjah M / Degree of M: 2

Jumlah darjah / Sum of degree

$$\begin{aligned}&= 3 + 2 + 3 + 4 + 3 + 3 + 2 \\&= 20\end{aligned}$$

Pasangan bucu D / The vertex pair of D

$$= \{(D, G), (D, K), (D, H)\}$$

34 A

$$\begin{aligned}\frac{x}{5} &= 1.52 \\x &= 7.6\end{aligned}$$

$$\begin{aligned}\text{Min tinggi baharu / New mean height} &= \frac{7.6 + 1.6 + 1.58}{7} \\&= 1.54\end{aligned}$$

**35 C**

35, 35, 40, 50, 62, 68, 76, 76, 90, 90

Median

$$\begin{aligned}\text{Median} &= \frac{62 + 68}{2} \\ &= 65\end{aligned}$$

**36 B**

$$\begin{aligned}\text{Murid Tingkatan 5} &= \frac{5}{8} \times 24 \\ \text{Form 5 students} &= 15\end{aligned}$$

$$\begin{aligned}\text{Murid Tingkatan 3} &= 24 - 15 + 4 \\ \text{Form 3 students} &= 13\end{aligned}$$

$$\begin{aligned}\text{Semua murid} &= 24 + 4 \\ \text{All students} &= 28\end{aligned}$$

$$\begin{aligned}\text{Kebarangkalian seorang murid Tingkatan 3 dipilih} &= \frac{13}{28} \\ \text{Probability that a Form 3 student is chosen}\end{aligned}$$

**37 A**

$$\begin{aligned}\text{Nilai mod} &= 20 \\ \text{Mode value}\end{aligned}$$

$$\begin{aligned}\text{Nilai terkecil Indeks Jisim Badan} &= 17 \\ \text{The smallest value of Body Mass Index}\end{aligned}$$

$$\begin{aligned}\text{Beza antara nilai mod dan nilai terkecil Indeks Jisim Badan} & \\ \text{The difference between the mode value and the smallest value of Body Mass Index} &= 20 - 17 \\ &= 3\end{aligned}$$

**38 D**

$$\begin{aligned}\text{Varians} &= \frac{245\,508}{9} - \left(\frac{1\,484}{9}\right)^2 \\ \text{Variance} &= 90.32\end{aligned}$$

**39 B**

**A, C dan D** ialah peristiwa saling eksklusif.  
*A, C and D are mutually exclusive events.*

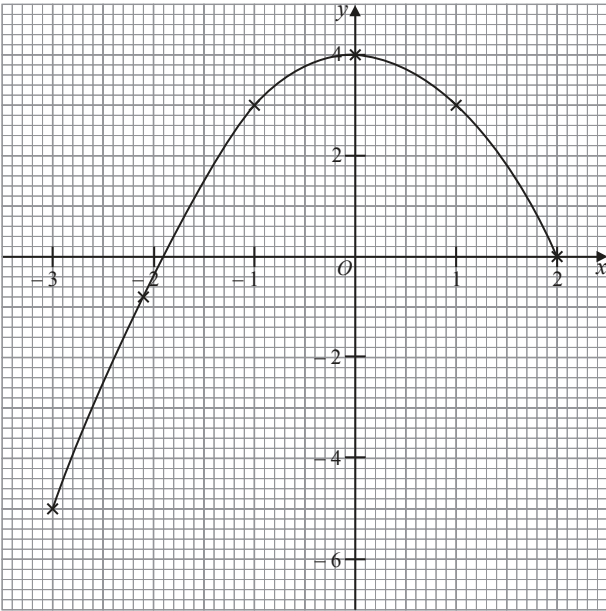
**40 C**

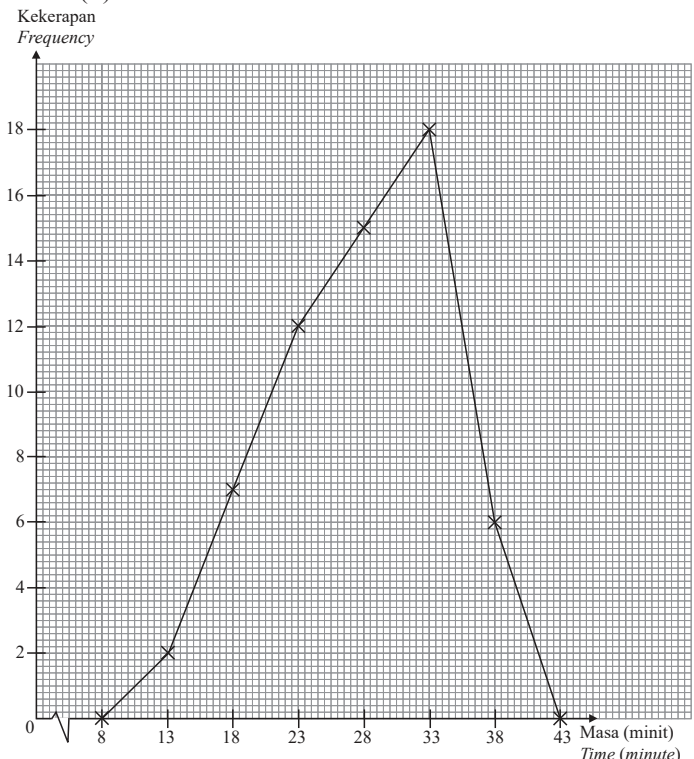
**A:** Laju perlu bermula dari  $79.5 \text{ km j}^{-1}$  hingga  $139.5 \text{ km j}^{-1}$ .  
*The speed should start from  $79.5 \text{ km h}^{-1}$  to  $139.5 \text{ km h}^{-1}$ .*

**B:** Laju perlu bermula dari  $79.5 \text{ km j}^{-1}$  hingga  $139.5 \text{ km j}^{-1}$ .  
*The speed should start from  $79.5 \text{ km h}^{-1}$  to  $139.5 \text{ km h}^{-1}$ .*

**D:** Nilai median adalah salah.  
*The median value is incorrect.*

**KERTAS 2**
**Bahagian A**

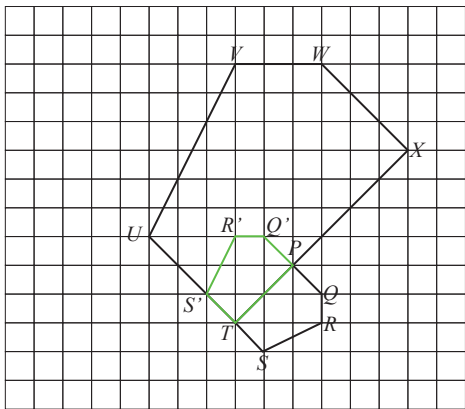
| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                                             | Markah<br>Marks | Markah Total<br>Total Marks |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------|
| 1   | (a) (i) Pernyataan / <i>Statement</i>                                                                                                                                          | 1               | 4                           |
|     | (ii) Bukan pernyataan / <i>Not a statement</i>                                                                                                                                 | 1               |                             |
|     | (b) (i) Jika $2 + 2 \neq 2 \times 2$ , maka $3 + 3 \neq 3 \times 3$<br><i>If <math>2 + 2 \neq 2 \times 2</math>, then <math>3 + 3 \neq 3 \times 3</math></i>                   | 1               |                             |
|     | (ii) Benar / <i>True</i>                                                                                                                                                       | 1               |                             |
| 2   |                                                                                              | 3               | 3                           |
| 3   | (a) $\angle VSW$ atau / <i>or</i> $\angle WSV$                                                                                                                                 | 1               | 3                           |
|     | (b) $\tan \theta = \frac{3.5}{2}$                                                                                                                                              | 1               |                             |
|     | $\theta = 60^\circ 15'$                                                                                                                                                        | 1               |                             |
| 4   | (a) Kos pembedahan selepas deduktibel = RM38 000 – RM3 000<br><i>The surgery cost after the deductible</i><br>$= \text{RM}35\,000$                                             | 1               | 3                           |
|     | (b) Kos perubatan yang ditanggung oleh Suzie<br><i>The medical cost borne by Suzie</i><br>$= \frac{25}{100} \times \text{RM}35\,000 + \text{RM}3\,000$<br>$= \text{RM}11\,750$ | 1               |                             |
|     |                                                                                                                                                                                | 1               |                             |
| 5   | (a) Isi padu / <i>Volume</i> = $(w + 10)(w)(60)$<br>$120\,000 = (w + 10)(60w)$<br>$60w^2 + 600w - 120\,000 = 0$<br>$w^2 + 10w - 2\,000 = 0$                                    | 1               | 4                           |
|     | (b) $(w - 40)(w + 50) = 0$<br>$w = 40, w = -50$<br>$\therefore$ Lebar kuboid / <i>The width of the cuboid</i> = 40 cm                                                          | 1               |                             |
|     |                                                                                                                                                                                | 1               |                             |

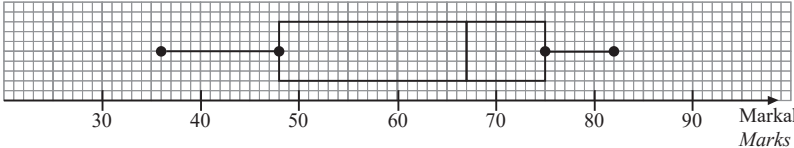
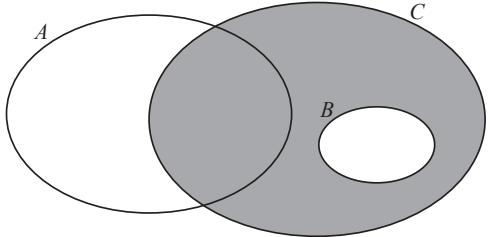
| No.                                                                                         | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Markah<br>Marks               | Markah Total<br>Total Marks |                                              |                                              |                                       |         |    |   |   |         |    |   |   |         |    |    |    |         |    |    |    |         |    |    |    |         |    |   |   |   |
|---------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-----------------------------|----------------------------------------------|----------------------------------------------|---------------------------------------|---------|----|---|---|---------|----|---|---|---------|----|----|----|---------|----|----|----|---------|----|----|----|---------|----|---|---|---|
| 6                                                                                           | (a) (i) Set bucu = {Melaka, Kuala Lumpur, Shah Alam, Ipoh}<br>Set of vertices                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1                             |                             |                                              |                                              |                                       |         |    |   |   |         |    |   |   |         |    |    |    |         |    |    |    |         |    |    |    |         |    |   |   |   |
|                                                                                             | (ii) $2 \times 6 = 12$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1                             |                             |                                              |                                              |                                       |         |    |   |   |         |    |   |   |         |    |    |    |         |    |    |    |         |    |    |    |         |    |   |   |   |
|                                                                                             | (b) Laluan alternatif paling murah = Melaka → Kuala Lumpur → Ipoh<br>The cheapest alternative route                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1                             |                             |                                              |                                              |                                       |         |    |   |   |         |    |   |   |         |    |    |    |         |    |    |    |         |    |    |    |         |    |   |   |   |
|                                                                                             | $= \text{RM}14.40 + \text{RM}25.50$<br>$= \text{RM}39.90$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1                             | 4                           |                                              |                                              |                                       |         |    |   |   |         |    |   |   |         |    |    |    |         |    |    |    |         |    |    |    |         |    |   |   |   |
| 7                                                                                           | (a) Sewa rumah / Premium insurans<br>House rent / Insurance premium                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1                             |                             |                                              |                                              |                                       |         |    |   |   |         |    |   |   |         |    |    |    |         |    |    |    |         |    |    |    |         |    |   |   |   |
|                                                                                             | (b) Jumlah simpanan / Savings amount                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                               |                             |                                              |                                              |                                       |         |    |   |   |         |    |   |   |         |    |    |    |         |    |    |    |         |    |    |    |         |    |   |   |   |
|                                                                                             | $= \frac{80}{100} \times [3\,800 - (480 + 250 + 750 + 350 + 420 + 400 + 200)]$<br>$= \text{RM}760$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2                             |                             |                                              |                                              |                                       |         |    |   |   |         |    |   |   |         |    |    |    |         |    |    |    |         |    |    |    |         |    |   |   |   |
|                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1                             | 4                           |                                              |                                              |                                       |         |    |   |   |         |    |   |   |         |    |    |    |         |    |    |    |         |    |    |    |         |    |   |   |   |
| 8                                                                                           | (a), (b)(i)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                               |                             |                                              |                                              |                                       |         |    |   |   |         |    |   |   |         |    |    |    |         |    |    |    |         |    |    |    |         |    |   |   |   |
|                                                                                             | <table><thead><tr><th>Masa (minit)<br/>Time (minute)</th><th>Titik tengah<br/>Midpoint</th><th>Kekerapan yang direkod<br/>Recorded frequency</th><th>Kekerapan sebenar<br/>Actual frequency</th></tr></thead><tbody><tr><td>11 – 15</td><td>13</td><td>2</td><td>2</td></tr><tr><td>16 – 20</td><td>18</td><td>6</td><td>7</td></tr><tr><td>21 – 25</td><td>23</td><td>12</td><td>12</td></tr><tr><td>26 – 30</td><td>28</td><td>15</td><td>15</td></tr><tr><td>31 – 35</td><td>33</td><td>17</td><td>18</td></tr><tr><td>36 – 40</td><td>38</td><td>6</td><td>6</td></tr></tbody></table> | Masa (minit)<br>Time (minute) |                             | Titik tengah<br>Midpoint                     | Kekerapan yang direkod<br>Recorded frequency | Kekerapan sebenar<br>Actual frequency | 11 – 15 | 13 | 2 | 2 | 16 – 20 | 18 | 6 | 7 | 21 – 25 | 23 | 12 | 12 | 26 – 30 | 28 | 15 | 15 | 31 – 35 | 33 | 17 | 18 | 36 – 40 | 38 | 6 | 6 | 2 |
|                                                                                             | Masa (minit)<br>Time (minute)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Titik tengah<br>Midpoint      |                             | Kekerapan yang direkod<br>Recorded frequency | Kekerapan sebenar<br>Actual frequency        |                                       |         |    |   |   |         |    |   |   |         |    |    |    |         |    |    |    |         |    |    |    |         |    |   |   |   |
| 11 – 15                                                                                     | 13                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2                             | 2                           |                                              |                                              |                                       |         |    |   |   |         |    |   |   |         |    |    |    |         |    |    |    |         |    |    |    |         |    |   |   |   |
| 16 – 20                                                                                     | 18                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 6                             | 7                           |                                              |                                              |                                       |         |    |   |   |         |    |   |   |         |    |    |    |         |    |    |    |         |    |    |    |         |    |   |   |   |
| 21 – 25                                                                                     | 23                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 12                            | 12                          |                                              |                                              |                                       |         |    |   |   |         |    |   |   |         |    |    |    |         |    |    |    |         |    |    |    |         |    |   |   |   |
| 26 – 30                                                                                     | 28                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 15                            | 15                          |                                              |                                              |                                       |         |    |   |   |         |    |   |   |         |    |    |    |         |    |    |    |         |    |    |    |         |    |   |   |   |
| 31 – 35                                                                                     | 33                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 17                            | 18                          |                                              |                                              |                                       |         |    |   |   |         |    |   |   |         |    |    |    |         |    |    |    |         |    |    |    |         |    |   |   |   |
| 36 – 40                                                                                     | 38                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 6                             | 6                           |                                              |                                              |                                       |         |    |   |   |         |    |   |   |         |    |    |    |         |    |    |    |         |    |    |    |         |    |   |   |   |
| (ii)<br> | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                               |                             |                                              |                                              |                                       |         |    |   |   |         |    |   |   |         |    |    |    |         |    |    |    |         |    |    |    |         |    |   |   |   |

6

| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                               | Markah<br>Marks | Markah Total<br>Total Marks |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------|
| 9   | (a) $25 \text{ m s}^{-1}$                                                                                                                                                                        | 1               | 5                           |
|     | (b) (i) Kadar perubahan laju = $\frac{50 \text{ m s}^{-1}}{5 \text{ s}}$<br>Rate of change of speed<br>$= 10 \text{ m s}^{-2}$                                                                   | 1               |                             |
|     | (ii) Beza jarak / The difference between distance<br>$= \left[ \frac{1}{2} (3 + 6)(30) \right] - \left[ \frac{1}{2} (5)(25) \right]$<br>$= 135 \text{ m} - 62.5 \text{ m}$<br>$= 72.5 \text{ m}$ | 2               |                             |
|     |                                                                                                                                                                                                  | 1               |                             |
| 10  | (a) $y = -a \cos / \cos bx + 10$<br>$a = \frac{18 - 2}{2}$<br>$= 8$<br>$b = \frac{360^\circ}{60}$<br>$= 6$                                                                                       | 1               | 4                           |
|     |                                                                                                                                                                                                  | 1               |                             |
|     | (b) $y = -8 \cos / \cos 6x + 10$<br>$y = -8 \cos / \cos 6(73) + 10$<br>$y = -8 \cos / \cos (438) + 10$<br>$y = 8.34 \text{ m}$                                                                   | 1               |                             |
|     |                                                                                                                                                                                                  | 1               |                             |

### Bahagian B

| No.   | Skema Pemarkahan<br>Marking Scheme                                                                                                     | Markah<br>Marks | Markah Total<br>Total Marks |
|-------|----------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------|
| 11    | (a) Sisi sepadan / Corresponding side: $UV$ atau / or $VU$<br>Sudut sepadan / Corresponding angle: $\angle PSR$ atau / or $\angle RSP$ | 1               | 9                           |
|       |                                                                                                                                        | 1               |                             |
|       | (b) (i)                                             | 1               |                             |
|       | (ii) Pembesaran dengan faktor skala 3 pada pusat $T$ .<br>Enlargement with scale factor 3 at centre $T$ .                              | 3               |                             |
| (iii) | (a) $1 : 9$                                                                                                                            | 1               | 1                           |
|       | (b) Luas pentagon $PQRST$ / The area of pentagon $PQRST = \frac{240 \text{ cm}^2}{(1 + 9)}$                                            | 1               |                             |
|       | $= 24 \text{ cm}^2$                                                                                                                    | 1               |                             |

| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                                                                                                                                                                                             | Markah<br>Marks                                       | Markah Total<br>Total Marks |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|-----------------------------|
| 12  | <p>(a) (i)</p>  <p>(ii) Min / Mean</p> $\frac{36 + 40 + 45 + 48 + 50 + 63 + 63 + 67 + 72 + 74 + 75 + 75 + 76 + 80 + 82}{15}$ $= \frac{946}{15} \text{ atau / or } 63 \frac{1}{15} \text{ atau / or } 63.07$ <p>(iii) Pencong ke kiri<br/>Left-skewed</p> <p>(b) Salah / Wrong.<br/>Mod baharu ialah 61 dan 73. / New modes are 61 and 73.</p> | <p>3</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> | 8                           |
| 13  | <p>(a) (i) (a) {memancing, memasak}<br/>{fishing, cooking}</p> <p>(b) {berenang, berbasikal}<br/>{swimming, cycling}</p> <p>(ii)</p>  <p>(b) (i) <math>5 + 1 + 2x = 10</math><br/><math>x = 2</math></p> <p><math>y + 5 + 1 + 2(2) + 7 + 4 = 24</math><br/><math>y = 3</math></p> <p>(ii) <math>F \cap (C \cup H)'</math></p>                | <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>2</p>          | 9                           |
| 14  | <p>(a) <math>x \leq 42</math><br/><math>y \leq 2x</math></p>                                                                                                                                                                                                                                                                                                                                                                   | <p>1</p> <p>1</p>                                     |                             |

| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                                          | Markah<br>Marks | Markah Total<br>Total Marks |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------|
|     | <p>(b) (i) Bilangan beg tangan eksklusif yang dihasilkan lebih besar daripada 46.<br/><i>The number of exclusive handbags produced is greater than 46.</i></p> <p>(ii) </p> | 1               | 9                           |
|     | (c) (i) Bilangan maksimum beg tangan eksklusif = 83 atau 84<br><i>The maximum number of exclusive handbags = 83 or 84</i>                                                   | 1               |                             |
|     | (ii) Tidak / No                                                                                                                                                             | 1               |                             |
|     | Titik (25, 60) berada di luar rantau berlorek.<br><i>Point (25, 60) locates outside of the shaded region.</i>                                                               | 1               |                             |
| 15  | (a) Jumlah pelepasan cukai yang boleh dituntut<br><i>Total tax relief that can be claimed</i><br>= 9 000 + 3 105 + 1 545 + 3 000<br>= 16 650                                | 1<br>1          |                             |
|     | (b) (i) (a) Cukai pendapatan Encik Ali / <i>Encik Ali's tax assessment</i><br>= $3\,700 + \frac{19}{100} \times (73\,000 - 70\,000)$<br>= RM4 270                           | 1<br>1          |                             |
|     | (b) Cukai pendapatan isteri Encik Ali / <i>Encik Ali's wife tax assessment</i><br>= $1\,500 + \frac{11}{100} \times (73\,000 - 5\,000 - 50\,000)$<br>= RM3 480              | 1<br>1          |                             |
|     |                                                                                                                                                                             |                 |                             |
|     |                                                                                                                                                                             |                 |                             |
|     |                                                                                                                                                                             |                 |                             |

| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                      | Markah<br>Marks | Markah Total<br>Total Marks |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------|
|     | (ii) Jumlah cukai pendapatan Encik Ali dan isteri<br><i>Total income tax of Encik Ali and his wife</i><br>$= 9\,400 + \frac{25}{100} \times (150\,000 - 100\,000)$ $= \text{RM}21\,900$ | 1<br>1          | 10                          |
|     | (iii) Taksiran cukai individu.<br><i>Individual tax assessment.</i><br>Cukai pendapatan yang dibayar adalah lebih rendah.<br><i>The income tax paid is lower.</i>                       | 1<br>1          |                             |

### Bahagian C

| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                                               | Markah<br>Marks | Markah Total<br>Total Marks |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------|
| 16  | (a) $C \propto L$<br>$C = kL$<br>$k = \frac{2}{5}$ atau / or 0.4<br>$\therefore C = \frac{2}{5}L$ atau / or $C = 0.4L$                                                           | 1<br>1          |                             |
|     | (b) $600b + 450p = 3\,975$ atau / or $250b + 470p = 2\,645$                                                                                                                      | 1               |                             |
|     | $\begin{bmatrix} 600 & 450 \\ 250 & 470 \end{bmatrix} \begin{bmatrix} b \\ p \end{bmatrix} = \begin{bmatrix} 3\,975 \\ 2\,645 \end{bmatrix}$                                     | 1               |                             |
|     | $\begin{bmatrix} b \\ p \end{bmatrix} = \frac{1}{(600)(470) - (450)(250)} \begin{bmatrix} 470 & -450 \\ -250 & 600 \end{bmatrix} \begin{bmatrix} 3\,975 \\ 2\,645 \end{bmatrix}$ | 1               |                             |
|     | $\begin{bmatrix} b \\ p \end{bmatrix} = \frac{1}{169\,500} \begin{bmatrix} 678\,000 \\ 593\,250 \end{bmatrix}$                                                                   |                 |                             |
|     | $\begin{bmatrix} b \\ p \end{bmatrix} = \begin{bmatrix} 4 \\ 3.5 \end{bmatrix}$                                                                                                  |                 |                             |
|     | Harga sekilogram betik / <i>The price of one kilogram of papayas</i> , $b = \text{RM}4$                                                                                          | 1               |                             |
|     | Harga sekilogram pisang / <i>The price of one kilogram of bananas</i> , $p = \text{RM}3.50$                                                                                      | 1               |                             |
|     | (c) (i) Jumlah hasil tuaian bagi betik / <i>Total harvest of papayas</i><br>$= \frac{15\,824}{3.80 + 0.80}$ $= 3\,440 \text{ kg}$                                                | 1<br>1          |                             |
|     | (ii) Jisim betik pada dalam minggu ketiga<br><i>The mass of papaya in the third week</i><br>$= 3\,440 - (1\,080 + 900 + 980)$ $= 480 \text{ kg}$                                 | 1               |                             |

| No.            | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Markah<br>Marks              | Markah Total<br>Total Marks |                 |                       |               |      |      |   |              |     |     |   |              |     |             |     |                |     |     |   |   |  |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-----------------------------|-----------------|-----------------------|---------------|------|------|---|--------------|-----|-----|---|--------------|-----|-------------|-----|----------------|-----|-----|---|---|--|
|                | <p>Jisim (kg)<br/>Mass (kg)</p> <table border="1"> <caption>Bar Chart Data</caption> <thead> <tr> <th>Minggu Week</th> <th>Hatched Bar (kg)</th> <th>Dotted Bar (kg)</th> <th>Green Dotted Bar (kg)</th> </tr> </thead> <tbody> <tr> <td>Pertama First</td> <td>1000</td> <td>1100</td> <td>-</td> </tr> <tr> <td>Kedua Second</td> <td>820</td> <td>900</td> <td>-</td> </tr> <tr> <td>Ketiga Third</td> <td>960</td> <td>480 (green)</td> <td>960</td> </tr> <tr> <td>Keempat Fourth</td> <td>620</td> <td>980</td> <td>-</td> </tr> </tbody> </table> | Minggu Week                  | Hatched Bar (kg)            | Dotted Bar (kg) | Green Dotted Bar (kg) | Pertama First | 1000 | 1100 | - | Kedua Second | 820 | 900 | - | Ketiga Third | 960 | 480 (green) | 960 | Keempat Fourth | 620 | 980 | - | 1 |  |
| Minggu Week    | Hatched Bar (kg)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Dotted Bar (kg)              | Green Dotted Bar (kg)       |                 |                       |               |      |      |   |              |     |     |   |              |     |             |     |                |     |     |   |   |  |
| Pertama First  | 1000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1100                         | -                           |                 |                       |               |      |      |   |              |     |     |   |              |     |             |     |                |     |     |   |   |  |
| Kedua Second   | 820                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 900                          | -                           |                 |                       |               |      |      |   |              |     |     |   |              |     |             |     |                |     |     |   |   |  |
| Ketiga Third   | 960                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 480 (green)                  | 960                         |                 |                       |               |      |      |   |              |     |     |   |              |     |             |     |                |     |     |   |   |  |
| Keempat Fourth | 620                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 980                          | -                           |                 |                       |               |      |      |   |              |     |     |   |              |     |             |     |                |     |     |   |   |  |
|                | <p>(d) Jumlah simpanan di Bank P = <math>70\,000 \left(1 + \frac{0.05}{4}\right)^{(4)(3)}</math><br/>Total savings in Bank P<br/>= RM81 252.82</p> <p>Jumlah simpanan di Bank Q = <math>70\,000 \left(1 + \frac{0.055}{1}\right)^{(1)(3)}</math><br/>Total savings in Bank Q<br/>= RM82 196.90</p> <p>RM81 252.82 dan / and RM82 196.90</p> <p>Bank Q memberi lebih pulangan.<br/>Bank Q give more return.</p>                                                                                                                                           | 1<br><br>1<br><br>1<br><br>1 | 15                          |                 |                       |               |      |      |   |              |     |     |   |              |     |             |     |                |     |     |   |   |  |
| 17             | <p>(a) <math>N \propto TM</math><br/><math>N = kTM</math></p> <p><math>k = \frac{240}{600 + 400}</math><br/><math>k = \frac{1}{1\,000}</math></p> <p><math>\therefore N = \frac{1}{1\,000} TM</math></p>                                                                                                                                                                                                                                                                                                                                                 | 1<br><br>1                   |                             |                 |                       |               |      |      |   |              |     |     |   |              |     |             |     |                |     |     |   |   |  |

| No.                                                                                                                                                                                                                | Skema Pemarkahan<br>Marking Scheme                                                                                                                                | Markah<br>Marks | Markah Total<br>Total Marks |   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------|---|
|                                                                                                                                                                                                                    | (b) $90x + 30y = 276$ atau / or $15x + 25y = 89$                                                                                                                  | 1               |                             |   |
|                                                                                                                                                                                                                    | $\begin{bmatrix} 90 & 30 \\ 15 & 25 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 276 \\ 89 \end{bmatrix}$                                 | 1               |                             |   |
|                                                                                                                                                                                                                    | $\begin{bmatrix} x \\ y \end{bmatrix} = \frac{1}{(90)(25) - (15)(30)} \begin{bmatrix} 25 & -30 \\ -15 & 90 \end{bmatrix} \begin{bmatrix} 276 \\ 89 \end{bmatrix}$ | 1               |                             |   |
|                                                                                                                                                                                                                    | $\begin{bmatrix} x \\ y \end{bmatrix} = \frac{1}{1\ 800} \begin{bmatrix} 4\ 230 \\ 3\ 870 \end{bmatrix}$                                                          |                 |                             |   |
|                                                                                                                                                                                                                    | $\begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 2.35 \\ 2.15 \end{bmatrix}$                                                                               |                 |                             |   |
|                                                                                                                                                                                                                    | Harga sebiji ban keju / The price of one piece of cheese bun = RM2.35                                                                                             | 1               |                             |   |
|                                                                                                                                                                                                                    | Harga sebiji ban kaya / The price of one piece of kaya bun = RM2.15                                                                                               | 1               |                             |   |
|                                                                                                                                                                                                                    | (c) Jumlah bilangan kek lemon yang dijual pada hari Isnin dan Rabu<br>Total number of lemon cakes sold on Monday and Wednesday                                    |                 |                             | 1 |
|                                                                                                                                                                                                                    | $= \frac{1}{4} \times 60$<br>$= 15$                                                                                                                               |                 |                             |   |
|                                                                                                                                                                                                                    | 1 bahagian / 1 part = $15 \div 3$<br>$= 5$                                                                                                                        |                 |                             |   |
| $\therefore$ Bilangan kek lemon yang dijual pada hari Isnin = 5<br>Number of lemon cakes sold on Monday                                                                                                            |                                                                                                                                                                   |                 |                             |   |
| Untung jualan kek lemon<br>Profit of lemon cakes<br>$= 48(\text{RM}50.00 - \text{RM}24.00)$<br>$= \text{RM}1\ 248$                                                                                                 | Untung jualan kek coklat<br>Profit of chocolate cakes<br>$= 60(\text{RM}52.50 - \text{RM}30.00)$<br>$= \text{RM}1\ 350$                                           | 1               |                             |   |
|                                                                                                                                                                                                                    |                                                                                                                                                                   | 1               |                             |   |
| Salah, jualan kek coklat memberikan lebih keuntungan daripada jualan kek lemon untuk lima hari itu.<br>Incorrect, the sales of chocolate cakes made more profit than the sales of lemon cakes for these five days. |                                                                                                                                                                   | 1               |                             |   |
| (d) Jumlah potongan bulanan / Total monthly deductions                                                                                                                                                             |                                                                                                                                                                   | 1               |                             |   |
| $= \frac{12}{100} \times 6\ 500$<br>$= \text{RM}780$                                                                                                                                                               |                                                                                                                                                                   |                 |                             |   |
| Jumlah bayaran balik Bank V<br>Total repayments Bank V                                                                                                                                                             | Jumlah bayaran balik Bank W<br>Total repayments Bank W                                                                                                            |                 |                             |   |
| $= \frac{25\ 000 + \left( 25\ 000 \times \frac{4.6}{100} \times 5 \right)}{5 \times 12}$<br>$= \text{RM}512.50$                                                                                                    | $= \frac{25\ 000 + \left( 25\ 000 \times \frac{4.8}{100} \times 3 \right)}{3 \times 12}$<br>$= \text{RM}794.44$                                                   |                 |                             | 1 |
|                                                                                                                                                                                                                    |                                                                                                                                                                   |                 |                             | 1 |
| $\therefore$ Lyn perlu pilih Bank V. / Lyn should choose Bank V.                                                                                                                                                   |                                                                                                                                                                   |                 |                             | 1 |
|                                                                                                                                                                                                                    |                                                                                                                                                                   |                 |                             |   |

KERTAS 1

1 A

$\begin{array}{r} \textcircled{1} \textcircled{2} \textcircled{3} \\ 80 \text{ } 6 \text{ } 49 \\ \downarrow \\ 80 \text{ } 600 \end{array}$

$4 < 5$ , maka digit 6 tidak berubah.  
 $4 < 5$ , thus digit 6 remains unchanged.

2 D

$\begin{array}{ccccccc} & \times (-4) & & \times (-4) & & \times (-4) & & \times (-4) \\ & \swarrow & \searrow & \swarrow & \searrow & \swarrow & \searrow & \swarrow \\ 0.07 & , & -0.28 & , & 1.12 & , & -4.48 & , & 17.92, \dots \end{array}$

3 D

$$\begin{aligned} 317_8 &= (3 \times 8^2) + (1 \times 8^1) + (7 \times 8^0) \\ &= 192 + 8 + 7 \end{aligned}$$

4 A

Bilangan jualan kereta nasional  
*Number of sales for national car*

$$\begin{aligned} &= \frac{34}{100} \times 1\,300 \\ &= 442 \end{aligned}$$

Bilangan jualan kereta import  
*Number of sales for imported car*

$$\begin{aligned} &= \frac{66}{100} \times 1\,300 \\ &= 858 \end{aligned}$$

Beza bilangan jualan kereta import dengan kereta nasional  
*Difference in number of sales between national car and imported car*  
 $= 858 - 442$   
 $= 416$

$$\begin{array}{r|l} 6 & 416 \\ \hline 6 & 69 - 2 \\ \hline 6 & 11 - 3 \\ \hline 6 & 1 - 5 \\ \hline & 0 - 1 \end{array}$$

Beza bilangan jualan kereta import dengan kereta nasional dalam asas enam  $= 1532_6$   
*Difference in number of sales between national car and imported car in base six*

5 B

Wang pendahuluan / *Down payment*

$$\begin{aligned} &= \frac{15}{100} \times \text{RM}60\,000 \\ &= \text{RM}9\,000 \end{aligned}$$

Jumlah perbelanjaan / *Total expenses*

$$\begin{aligned} &= \text{RM}1\,300 + \text{RM}280 + \text{RM}500 + \text{RM}750 \\ &= \text{RM}2\,830 \end{aligned}$$

Simpanan bulanan / *Monthly savings*

$$\begin{aligned} &= \frac{\text{RM}9\,000}{2 \times 12} \\ &= \text{RM}375 \end{aligned}$$

Jumlah pendapatan minimum Azli untuk mencapai matlamatnya

*Azli's minimum total salary to achieve his goal*

$$\begin{aligned} &= \text{RM}2\,830 + \text{RM}375 \\ &= \text{RM}3\,205 \end{aligned}$$

6 C

Syarikat Gigih = 8:30 a.m., 10:30 a.m., 12:30 p.m., 2:30 p.m., 4:30 p.m., ...  
*Company Gigih*

Syarikat Maju = 9:00 a.m., 10:30 a.m., 12:00 p.m., 1:30 p.m., 3:00 p.m., 4:30 p.m., ...  
*Company Maju*

Syarikat Jaya = 11:30 a.m., 12:30 p.m., 1:30 p.m., 2:30 p.m., 3:30 p.m., 4:30 p.m., ...  
*Company Jaya*

Syarikat Yakin = 10:30 a.m., 1:30 p.m., 4:30 p.m., ...  
*Company Yakin*

7 B

Premium tahunan / *Annual premium*

$$\begin{aligned} &= \frac{\text{RM}550\,000}{\text{RM}1\,000} \times \text{RM}3.34 \\ &= \text{RM}1\,837.00 \end{aligned}$$

8 C

Jumlah yang dibayar oleh syarikat insurans / *Amount paid by the insurance company*

$$\begin{aligned} &= \text{RM}135\,000 - \text{RM}5\,000 \\ &= \text{RM}130\,000 \end{aligned}$$

**9 B**

Cukai pintu tahunan Muthu / *Muthu's annual property assessment tax*

$$= \frac{5}{100} \times \text{RM}6\,645$$

$$= \text{RM}332.25$$

Cukai pintu tahunan Halim / *Halim's annual property assessment tax*

$$= \frac{5}{100} \times 12 \times \text{RM}500$$

$$= \text{RM}300.00$$

Beza jumlah cukai pintu yang perlu dibayar oleh Muthu dan Halim setiap tahun

*The difference of the property assessment tax payable by Muthu and Halim each year*

$$= \text{RM}332.25 - \text{RM}300.00$$

$$= \text{RM}32.25$$

**10 C**

$$\frac{6 - 2x}{3} = 4x$$

$$6 - 2x = 4x \times 3$$

$$6 - 2x = 12x$$

$$6 = 12x + 2x$$

$$14x = 6$$

$$x = \frac{6}{14}$$

$$x = \frac{3}{7}$$

**11 C**

Koordinat- $x$  / *x-coordinate*

$$= -3$$

Koordinat- $y$  / *y-coordinate*

$$= 7 - 5$$

$$= 2$$

Koordinat  $P$  / *Coordinates of  $P$*

$$= (-3, 2)$$

**12 D**

$$2y - 5x - 7 = 0$$

$$2(0) - 5x - 7 = 0$$

$$-5x = 7$$

$$x = -\frac{7}{5}$$

$$\text{Pintasan-}x \text{ / } x\text{-intercept} = -\frac{7}{5}$$

**13 B**

$$(5 - x)^2 = 25 - 10x + x^2$$

$$= c + bx + ax^2$$

$$a = 1, b = -10, c = 25$$

14 A

Luas segi empat selari / *Area of parallelogram* =  $x(x + 9)$

$$360 = x(x + 9)$$

$$360 = x^2 + 9x$$

$$x^2 + 9x - 360 = 0$$

$$(x - 15)(x + 24) = 0$$

$$x = 15 \text{ atau / or } x = -24$$

$$\therefore x = 15$$

15 A

$$16.5x + 18y = 360$$

$$\frac{33}{2}x + 18y = 360$$

16 C

A Jumlah jarak perjalanan ialah 110 km.

*The total distance travelled is 110 km.*

B Jumlah masa perjalanan ialah 2 jam.

*The total duration of the journey is 2 hours.*

D Amsyar berhenti rehat dari P ke Q.

*Amsyar stops for break from P to Q.*

17 C

Pecutan larian Ahmad / *Ahmad's run acceleration*

$$= \frac{6 \text{ m s}^{-1}}{10 \text{ s}}$$

$$= 0.6 \text{ m s}^{-2}$$

$$\begin{aligned} \text{Pecutan larian Goh / Goh's run acceleration} &= \frac{6 \text{ m s}^{-1}}{30 \text{ s}} \\ &= 0.2 \text{ m s}^{-2} \end{aligned}$$

Beza antara pecutan / *Difference between the accelerations*

$$= 0.6 \text{ m s}^{-2} - 0.2 \text{ m s}^{-2}$$

$$= 0.4 \text{ m s}^{-2}$$

18 A

$$m \begin{bmatrix} n \\ 8 \end{bmatrix} = \begin{bmatrix} 20 \\ -40 \end{bmatrix}$$

$$m(8) = -40$$

$$m = -\frac{40}{8}$$

$$m = -5$$

$$mn = 20$$

$$(-5)n = 20$$

$$n = -\frac{20}{5}$$

$$n = -4$$

19 A

$$3[-1 \ 2 \ 5] - \frac{1}{2}[3 \ 4 \ p] = [t \ k \ 0]$$

$$[-3 \ 6 \ 15] - \left[\frac{3}{2} \ \frac{4}{2} \ \frac{p}{2}\right] = [t \ k \ 0]$$

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

$$t = -\frac{9}{2}$$

$$6 - \frac{4}{2} = k$$

$$k = 4$$

$$15 - \frac{p}{2} = 0$$

$$15 = \frac{p}{2}$$

$$p = 30$$

20 B

$$p = \frac{1}{w^2}$$

$$p = \frac{k}{w^2}$$

$$3 = \frac{k}{2^2}$$

$$k = 3 \times 2^2$$

$$k = 12$$

$$p = \frac{12}{w^2}$$

21 B

$$R = \frac{S}{T}$$

$$p = \frac{kS}{T}$$

$$p = \frac{k(5)}{q}$$

$$p \times q = 5k$$

$$20 = 5k$$

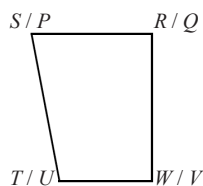
$$k = \frac{20}{5}$$

$$k = 4$$

$$y = \frac{4\left(\frac{1}{2}\right)}{6}$$

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

22 D

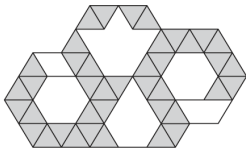


23 A

Luas kawasan yang berwarna biru / *Area of the blue coloured region*

$$\begin{aligned}
 &= \frac{1}{2} \pi r^2 - 2(\text{Luas segi tiga} / \text{Area of a triangle}) \\
 &= \frac{1}{2} \left( \frac{22}{7} \right) (7 \text{ cm})^2 - 2(24.5 \text{ cm}^2) \\
 &= 77 \text{ cm}^2 - 49 \text{ cm}^2 \\
 &= 28 \text{ cm}^2
 \end{aligned}$$

24 B



Terdapat bentuk yang tidak berulang.

*There are non-repeating shapes.*

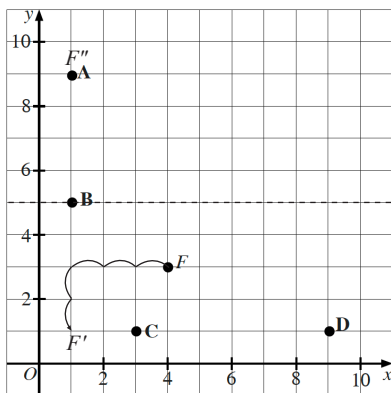
25 C

$$\begin{aligned}
 (x + 2) + (x + 2) + x + (x - 1) + x &= 18 \text{ cm} \\
 5x + 3 &= 18 \text{ cm} \\
 5x &= 18 \text{ cm} - 3 \text{ cm} \\
 x &= \frac{15}{5} \text{ cm} \\
 x &= 3 \text{ cm}
 \end{aligned}$$

Panjang  $BQ$  / *Length of BQ*

$$\begin{aligned}
 &= 3 \text{ cm} + (3 - 1) \text{ cm} + 3 \text{ cm} \\
 &= 8 \text{ cm}
 \end{aligned}$$

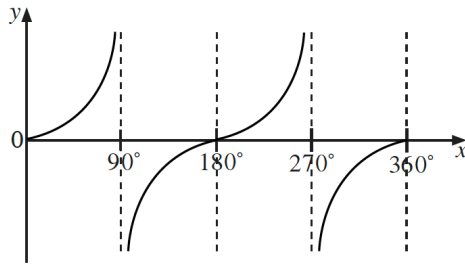
26 A



$$F(4, 3) \xrightarrow{R} F'(1, 1) \xrightarrow{S} F''(1, 9)$$

27 C

$$y = \tan x^\circ$$



28 D

$$\begin{aligned}\cos x &= -\cos(x^\circ + 180^\circ) \\ &= -(-0.866) \\ &= 0.866\end{aligned}$$

29 D

$$p: (-5)^2 = 5 \text{ (benar / true)}$$

$$q: \frac{1}{3} \text{ ialah integer (palsu)}$$

$$\frac{1}{3} \text{ is an integer (false)}$$

$$r: \frac{1}{3} \cdot \frac{1}{4} \text{ (palsu)}$$

$$\frac{1}{3} \cdot \frac{1}{4} \text{ (false)}$$

A:  $p$  atau  $q$ : benar atau palsu  $\rightarrow$  benar  
 $p$  or  $q$ : true or false  $\rightarrow$  true

B:  $p$  dan  $r$ : benar dan palsu  $\rightarrow$  palsu  
 $p$  and  $r$ : true and false  $\rightarrow$  false

C:  $q$  atau  $r$ : palsu atau palsu  $\rightarrow$  palsu  
 $q$  or  $r$ : false or false  $\rightarrow$  false

D:  $q$  dan  $r$ : palsu dan palsu  $\rightarrow$  palsu  
 $q$  and  $r$ : false and false  $\rightarrow$  false

30 C

A:  $n - 1, n = 1, 2, 3, 4, \dots$   
 $\rightarrow (1 - 1), (2 - 1), (3 - 1), (4 - 1) = 0, 1, 2, 3, \dots$  (Salah / Wrong)

B:  $2n - 2, n = 1, 2, 3, 4, \dots$   
 $\rightarrow 2(1) - 2, 2(2) - 2, 2(3) - 2, 2(4) - 2 = 0, 2, 4, 6, \dots$  (Salah / Wrong)

C:  $n^2 - 1, n = 1, 2, 3, 4, \dots$   
 $\rightarrow (1)^2 - 1, (2)^2 - 1, (3)^2 - 1, (4)^2 - 1 = 0, 3, 8, 15, \dots$  (Betul / Correct)

D:  $2n^2 - 2, n = 1, 2, 3, 4, \dots$   
 $\rightarrow 2(1)^2 - 2, 2(2)^2 - 2, 2(3)^2 - 2, 2(4)^2 - 2 = 0, 6, 16, 30, \dots$  (Salah / Wrong)

31 A

$$\begin{aligned}n(X') &= n(Y' \cap Z \cap X) \\2 + (2q + 8) &= q + 8 \\2q + 10 &= q + 8 \\2q - q &= 8 - 10 \\q &= -2\end{aligned}$$

32 B

$(P \cap Q)'$  = Kawasan berlorek selain daripada rantau persilangan set  $P$  dan set  $Q$ .  
 $(P \cap Q)'$  = Shaded area other than the intersection region of set  $P$  and set  $Q$ .

33 D

Jarak terdekat dari rumah Arif ke sekolah / Shortest distance from Arif's house to school  
= 500 m

Jarak terdekat dari rumah Moni ke sekolah / Shortest distance from Moni's house to school  
= 300 m + 450 m  
= 750 m

Beza jarak terdekat / Difference in the shortest distance  
= 750 m – 500 m  
= 250 m

34 C

|   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|
| 3 | 4 | 8 | 2 | 8 | 9 | 8 | 4 | 2 |
|---|---|---|---|---|---|---|---|---|

Mod / Mode = 8

35 D

Kebarangkalian memilih sebiji bola yang **bukan** berwarna hijau  
Probability of choosing a ball that is **not** green

$$\begin{aligned}&= \frac{15 + 10}{15 + 10 + 12} \\&= \frac{25}{37}\end{aligned}$$

36 B

$$\begin{aligned}\text{Purata / Average} \\&= \frac{310 - 70}{3} \\&= 80\end{aligned}$$

37 D

$$\begin{aligned}\sigma^2 &= \frac{\sum x^2}{N} - \bar{x}^2 \\&= \frac{704}{9} - \left(\frac{72}{9}\right)^2 \\&= \frac{128}{9} \\&= 14.22\end{aligned}$$

38 A

Kebarangkalian 2 batang pen berwarna merah dipilih

*Probability that 2 red pens are chosen*

$$\begin{aligned} &= \frac{2}{10} \times \frac{1}{9} \\ &= \frac{2}{90} \\ &= \frac{1}{45} \end{aligned}$$

39 A

Kebarangkalian Alex memenangi pingat dalam kedua-dua acara

*Probability that Alex wins the medals in both events*

$$\begin{aligned} &= 1 - \frac{7}{18} - \frac{5}{18} - \frac{2}{9} \\ &= \frac{18 - 7 - 5 - 4}{18} \\ &= \frac{2}{18} \\ &= \frac{1}{9} \end{aligned}$$

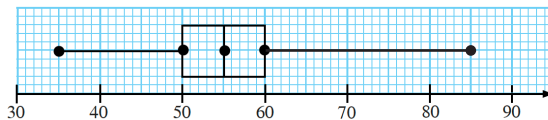
40 D

Julat / *Range* =  $x - 35$

$$50 = x - 35$$

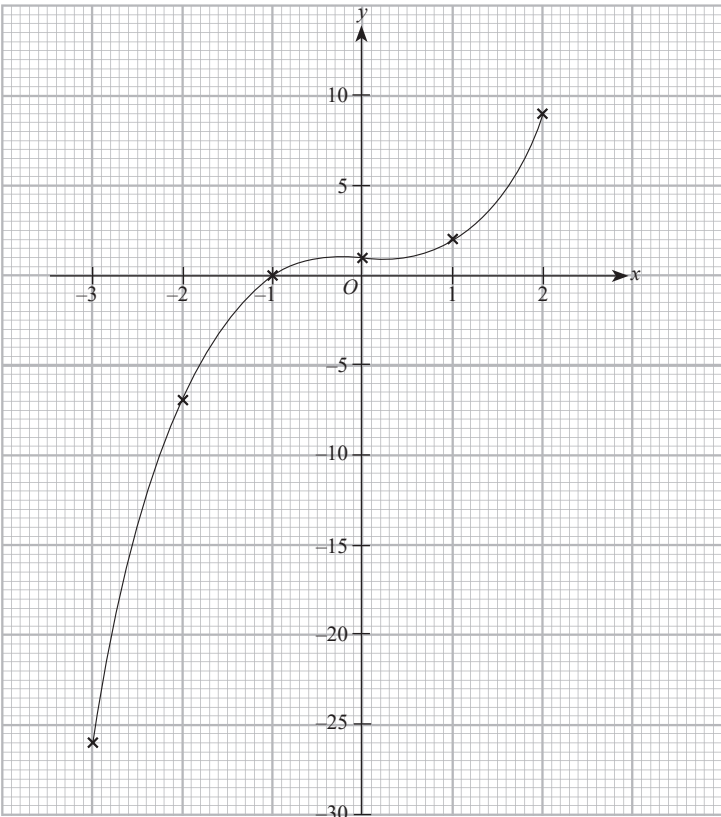
$$x = 35 + 50$$

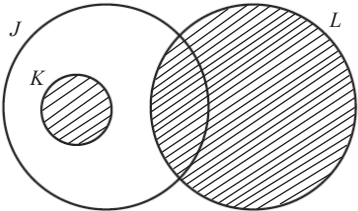
$$x = 85$$

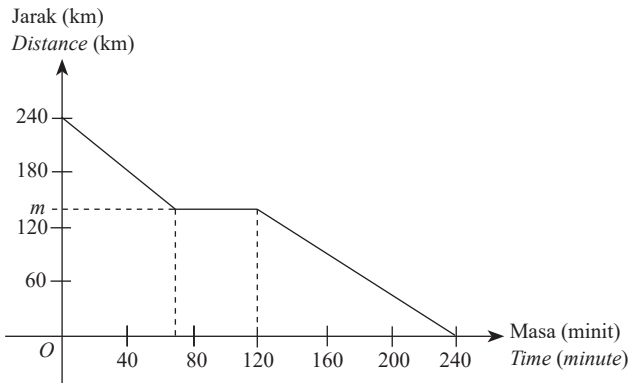


$\therefore$  Taburan pencong ke kanan. / *Right-skewed distribution.*

## Bahagian A

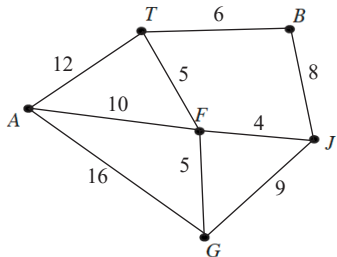
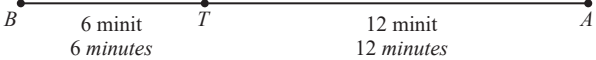
| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                                                                                                                                                                                                               | Markah<br>Marks | Markah Total<br>Total Marks |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------|
| 1   | (a) $1(6^3) + 5(6^2) + 0(6^1) + 2(6^0)$<br>$= 216 + 180 + 0 + 2$<br>$= 398$                                                                                                                                                                                                                                                                                                                                                                      | 1               |                             |
|     | (b) $5107_9 - 348_9$<br>$= [5(9^3) + 1(9^2) + 0(9^1) + 7(9^0)] - [3(9^2) + 4(9^1) + 8(9^0)]$<br>$= 3733_{10} - 287_{10}$<br>$= 3446_{10}$<br>$\begin{array}{r} 9 \overline{) 3446} \\ 9 \overline{) 382} \quad - 8 \\ 9 \overline{) 42} \quad - 4 \\ 9 \overline{) 4} \quad - 6 \\ 0 \quad - 4 \end{array}$                                                                                                                                      | 1               |                             |
|     | $X = 4648$                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1               |                             |
| 2   |  <p>Semua 6 titik diplot dengan betul bagi <math>-3 \leq x \leq 2</math> dan <math>-26 \leq y \leq 9</math>.<br/> <i>All 6 points are plotted correctly for <math>-3 \leq x \leq 2</math> and <math>-26 \leq y \leq 9</math>.</i></p> <p>Lengkung adalah licin dan melalui semua 6 titik.<br/> <i>The curve is smooth and passes through all 6 points.</i></p> | 2               | 3                           |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1               |                             |

| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                               | Markah<br>Marks | Markah Total<br>Total Marks |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------|
| 3   | (a) 50 cm                                                                                                                                                                                                                                                        | 1               | 3                           |
|     | (b) $\tan \theta = \frac{30}{50}$<br>$\theta = 30^\circ 58'$                                                                                                                                                                                                     | 1               |                             |
|     |                                                                                                                                                                                                                                                                  | 1               |                             |
| 4   | (a) (i) Palsu / False<br>(ii) Palsu / False                                                                                                                                                                                                                      | 1<br>1          | 5                           |
|     | (b) Jika c ialah pintasan-y maka $y = mx + c$ ialah persamaan bagi suatu garis lurus.<br><i>If c is the y-intercept then <math>y = mx + c</math> is the equation of a straight line.</i>                                                                         | 1               |                             |
|     | (c) Isi padu hemisfera / Volume of hemisphere<br>$\frac{4}{3}(\pi)(3^3)$ $= \frac{3}{2}$ $= 18\pi \text{ atau / or } \frac{396}{7}$                                                                                                                              | 1<br>1          |                             |
|     |                                                                                                                                                                                                                                                                  |                 |                             |
|     |                                                                                                                                                                                                                                                                  |                 |                             |
| 5   | (a)                                                                                                                                                                             | 2               | 4                           |
|     | (b) $5x + x + 1 + 3 = 52$<br>$6x + 4 = 52$<br>$6x = 52 - 4$<br>$6x = 48$<br>$x = 48 \div 6$<br>$x = 8$                                                                                                                                                           | 1<br>1          |                             |
|     |                                                                                                                                                                                                                                                                  |                 |                             |
| 6   | (a) Pendapatan bercukai Ayu bagi tahun 2024<br><i>Ayu's chargeable income for the year 2024</i><br>$= \text{RM}72\,400 - \text{RM}7\,964 - \text{RM}1\,200 - \text{RM}9\,000 - \text{RM}2\,500 - \text{RM}3\,400 - \text{RM}6\,500$<br>$= \text{RM}41\,836$      | 1<br>1          | 5                           |
|     | (b) Cukai pendapatan yang perlu dibayar oleh Ayu<br><i>Income tax payable by Ayu</i><br>$= \text{RM}600 + (\text{RM}41\,836 - \text{RM}35\,000) \times \frac{6}{100} - \text{RM}360$<br>$= \text{RM}600 + \text{RM}410.16 - \text{RM}360$<br>$= \text{RM}650.16$ | 2<br>1          |                             |
|     |                                                                                                                                                                                                                                                                  |                 |                             |
|     |                                                                                                                                                                                                                                                                  |                 |                             |
|     |                                                                                                                                                                                                                                                                  |                 |                             |
| 7   | (a) Kadar yang dikenakan bagi RM1 000 yang pertama = RM339.10<br><i>Rate charged for the first RM1 000</i>                                                                                                                                                       | 1               | 3                           |
|     | (b) Premium asas yang perlu dibayar oleh Zul<br><i>Basic premium that Zul has to pay</i><br>$= \text{RM}339.10 + \frac{90\,000 - 1\,000}{1\,000} \times \text{RM}26$<br>$= \text{RM}339.10 + \text{RM}2\,314$<br>$= \text{RM}2\,653.10$                          | 1<br>1          |                             |
|     |                                                                                                                                                                                                                                                                  |                 |                             |

| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                                                                                      | Markah<br>Marks | Markah Total<br>Total Marks |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------|
| 8   | (a) $m = 240 - 96$<br>$= 144 \text{ km}$                                                                                                                                                                                                                                                                                | 1               |                             |
|     | (b) (i) Tempoh masa perjalanan pulang Cikgu Lim dan murid-murid<br><i>Duration of the return journey of Cikgu Lim and the students</i><br>$= \frac{144 \text{ km}}{72 \text{ km j}^{-1}}$<br>$= 2 \text{ jam / hours}$                                                                                                  | 1               |                             |
|     | Waktu Cikgu Lim dan murid-murid tiba di sekolah<br><i>Time Cikgu Lim and the students arrive at school</i><br>$= \text{Jam } 1310 / 1310 \text{ hour} + 2 \text{ jam} / 2 \text{ hours}$<br>$= \text{Jam } 1310 / 1310 \text{ hour} + \text{Jam } 0200 / 0200 \text{ hour}$<br>$= \text{Jam } 1510 / 1510 \text{ hour}$ | 1               |                             |
|     | (ii)<br>                                                                                                                                                                                                                              | 1               |                             |
|     |                                                                                                                                                                                                                                                                                                                         |                 | 5                           |
| 9   | (a) Amplitud / <i>Amplitude</i><br>$= 25 \text{ m} - 15 \text{ m}$<br>$= 10 \text{ m}$                                                                                                                                                                                                                                  | 1               |                             |
|     | (b) (i) $a = 10$<br>$b = \frac{360^\circ}{12}$<br>$= 30$<br>$c = 15$<br><br>$y = 10 \text{ kos} / \cos 30x + 15$                                                                                                                                                                                                        | 2               |                             |
|     | (ii) $x = 14, y = 10 \text{ kos} / \cos 30x + 15$<br>$y = [10 \text{ kos} / \cos 30(14)] + 15$<br>$y = (10 \text{ kos} / \cos 420) + 15$<br>$y = 5 + 15$<br>$y = 20$                                                                                                                                                    | 1               |                             |
|     |                                                                                                                                                                                                                                                                                                                         |                 | 4                           |

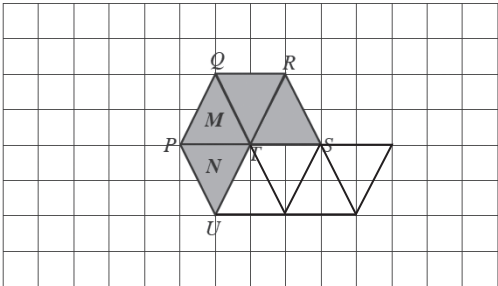
| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                              | Markah<br>Marks | Markah Total<br>Total Marks |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------|
| 10  | (a) $P(2_A \times 2_B) + P(3_A \times 3_B)$<br>$= \left(\frac{1}{3} \times \frac{1}{4}\right) + \left(\frac{1}{3} \times \frac{1}{4}\right)$<br>$= \frac{1}{12} + \frac{1}{12}$<br>$= \frac{2}{12}$ atau setara / or equivalent | 1               | 4                           |
|     |                                                                                                                                                                                                                                 | 1               |                             |
|     | (b) $P(\text{kedua-dua kad bernombor ganjil} / \text{both cards show an odd number})$<br>$= \frac{2}{3} \times \frac{3}{4}$<br>$= \frac{6}{12}$ atau setara / or equivalent                                                     | 1               |                             |
|     |                                                                                                                                                                                                                                 | 1               |                             |

### Bahagian B

|    |                                                                                                                                                                                                            |   |   |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|
| 11 | (a) (i) $n(V) = 3$<br>(ii) $n(E) = 5$                                                                                                                                                                      | 1 | 8 |
|    |                                                                                                                                                                                                            | 1 |   |
|    | (b) (i)<br>                                                                                                              | 2 |   |
|    | Masa minimum / Minimum time : 16 minit / minutes                                                                                                                                                           | 1 |   |
|    | (ii)<br>3:00 p.m. – 3:20 p.m.    3:20 p.m. + 00:18 = 3:38 p.m.    3:38 p.m. – 4:10 p.m.<br>                             | 1 |   |
|    | Tempoh masa maksimum Fatin dapat luangkan masa di Adi Sports (A)<br>Maximum time Fatin could spend in Adi Sports (A)<br>$= 4:10 \text{ p.m.} - 3:38 \text{ p.m.}$<br>$= 32 \text{ minit} / \text{minutes}$ | 1 |   |
|    |                                                                                                                                                                                                            | 1 |   |

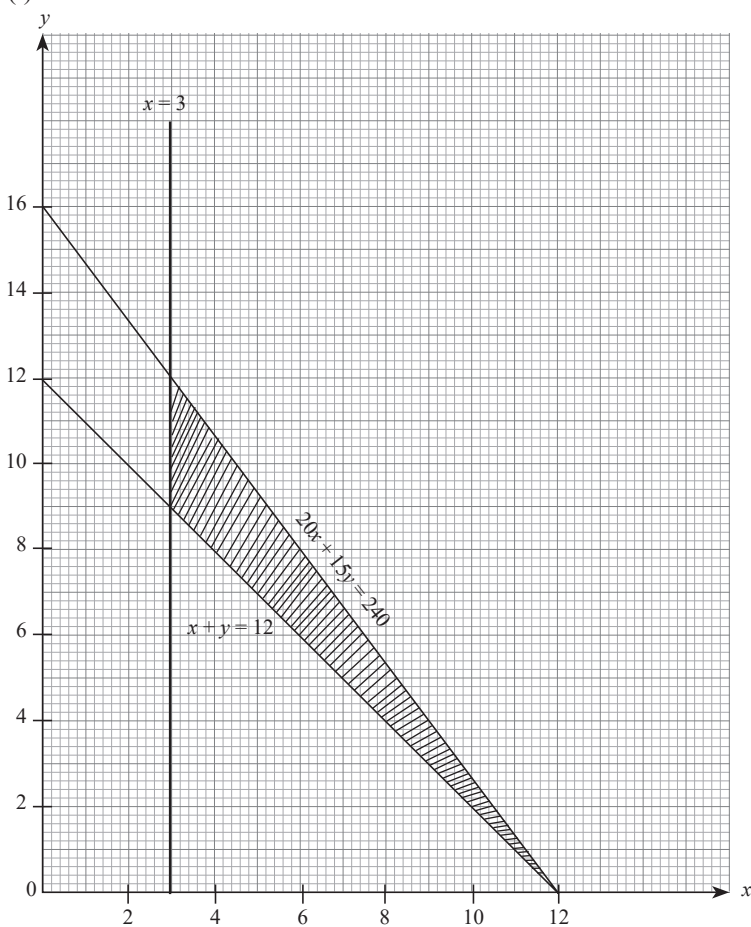
| No.                             | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Markah<br>Marks                 | Markah Total<br>Total Marks                 |                        |                                             |         |      |   |   |         |      |   |   |         |      |   |   |         |      |   |    |         |      |    |    |         |      |   |    |         |      |   |    |         |      |   |    |                   |  |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|---------------------------------------------|------------------------|---------------------------------------------|---------|------|---|---|---------|------|---|---|---------|------|---|---|---------|------|---|----|---------|------|----|----|---------|------|---|----|---------|------|---|----|---------|------|---|----|-------------------|--|
| 12                              | <p>(a)</p> <table border="1"> <thead> <tr> <th>Umur (tahun)<br/>Age (years old)</th><th>Sempadan atas<br/>Upper boundary</th><th>Kekerapan<br/>Frequency</th><th>Kekerapan longgokan<br/>Cumulative frequency</th></tr> </thead> <tbody> <tr><td>25 – 29</td><td>29.5</td><td>0</td><td>0</td></tr> <tr><td>30 – 34</td><td>34.5</td><td>3</td><td>3</td></tr> <tr><td>35 – 39</td><td>39.5</td><td>5</td><td>8</td></tr> <tr><td>40 – 44</td><td>44.5</td><td>7</td><td>15</td></tr> <tr><td>45 – 49</td><td>49.5</td><td>11</td><td>26</td></tr> <tr><td>50 – 54</td><td>54.5</td><td>8</td><td>34</td></tr> <tr><td>55 – 59</td><td>59.5</td><td>4</td><td>38</td></tr> <tr><td>60 – 64</td><td>64.5</td><td>2</td><td>40</td></tr> </tbody> </table> <p>Semua nilai sempadan atas betul. / All upper boundary values are correct.<br/>Semua nilai kekerapan longgokan betul.<br/>All cumulative frequency values are correct.</p> <p>(b), (c)(i)</p> | Umur (tahun)<br>Age (years old) | Sempadan atas<br>Upper boundary             | Kekerapan<br>Frequency | Kekerapan longgokan<br>Cumulative frequency | 25 – 29 | 29.5 | 0 | 0 | 30 – 34 | 34.5 | 3 | 3 | 35 – 39 | 39.5 | 5 | 8 | 40 – 44 | 44.5 | 7 | 15 | 45 – 49 | 49.5 | 11 | 26 | 50 – 54 | 54.5 | 8 | 34 | 55 – 59 | 59.5 | 4 | 38 | 60 – 64 | 64.5 | 2 | 40 | <p>1</p> <p>2</p> |  |
| Umur (tahun)<br>Age (years old) | Sempadan atas<br>Upper boundary                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Kekerapan<br>Frequency          | Kekerapan longgokan<br>Cumulative frequency |                        |                                             |         |      |   |   |         |      |   |   |         |      |   |   |         |      |   |    |         |      |    |    |         |      |   |    |         |      |   |    |         |      |   |    |                   |  |
| 25 – 29                         | 29.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 0                               | 0                                           |                        |                                             |         |      |   |   |         |      |   |   |         |      |   |   |         |      |   |    |         |      |    |    |         |      |   |    |         |      |   |    |         |      |   |    |                   |  |
| 30 – 34                         | 34.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 3                               | 3                                           |                        |                                             |         |      |   |   |         |      |   |   |         |      |   |   |         |      |   |    |         |      |    |    |         |      |   |    |         |      |   |    |         |      |   |    |                   |  |
| 35 – 39                         | 39.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 5                               | 8                                           |                        |                                             |         |      |   |   |         |      |   |   |         |      |   |   |         |      |   |    |         |      |    |    |         |      |   |    |         |      |   |    |         |      |   |    |                   |  |
| 40 – 44                         | 44.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 7                               | 15                                          |                        |                                             |         |      |   |   |         |      |   |   |         |      |   |   |         |      |   |    |         |      |    |    |         |      |   |    |         |      |   |    |         |      |   |    |                   |  |
| 45 – 49                         | 49.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 11                              | 26                                          |                        |                                             |         |      |   |   |         |      |   |   |         |      |   |   |         |      |   |    |         |      |    |    |         |      |   |    |         |      |   |    |         |      |   |    |                   |  |
| 50 – 54                         | 54.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 8                               | 34                                          |                        |                                             |         |      |   |   |         |      |   |   |         |      |   |   |         |      |   |    |         |      |    |    |         |      |   |    |         |      |   |    |         |      |   |    |                   |  |
| 55 – 59                         | 59.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 4                               | 38                                          |                        |                                             |         |      |   |   |         |      |   |   |         |      |   |   |         |      |   |    |         |      |    |    |         |      |   |    |         |      |   |    |         |      |   |    |                   |  |
| 60 – 64                         | 64.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 2                               | 40                                          |                        |                                             |         |      |   |   |         |      |   |   |         |      |   |   |         |      |   |    |         |      |    |    |         |      |   |    |         |      |   |    |         |      |   |    |                   |  |
|                                 | <p>(b) Kedua-dua paksi dilukis dalam arah yang betul dengan skala seragam untuk <math>29.5 \times 64.5</math> dan <math>0 \times 40</math>.<br/>Both axes are drawn in the correct direction with a uniform scale for <math>29.5 \times 64.5</math> and <math>0 \times 40</math>.</p> <p>Tujuh palang dilukis dengan betul menggunakan nilai sempadan.<br/>Seven bars are drawn correctly using the boundary values.</p> <p>Histogram longgokan dilukis dengan betul menggunakan skala yang diberi.<br/>Cumulative histogram is drawn correctly using the given scale.</p>                                                                                                                                                                                                                                                                                                                                                                               | <p>1</p> <p>2</p> <p>1</p>      |                                             |                        |                                             |         |      |   |   |         |      |   |   |         |      |   |   |         |      |   |    |         |      |    |    |         |      |   |    |         |      |   |    |         |      |   |    |                   |  |

| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Markah<br>Marks                                                         | Markah Total<br>Total Marks |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|-----------------------------|
|     | <p>(c) (i) Ogif dilukis betul pada histogram longgokan.<br/><i>The ogive is correctly drawn on the cumulative histogram.</i></p> <p>(ii) 70% daripada jumlah kekerapan / 70% of the total frequency<br/> <math display="block">= \frac{70}{100} \times 40</math> <math display="block">= 28</math> <p><math>P_{70} = 50.5</math>. Umur minimum pengunjung yang layak mendapat baucar minuman ialah 50.5.<br/> <math>P_{70} = 50.5</math>. The minimum age of visitors eligible to receive a drink voucher is 50.5.</p> </p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <p>1</p> <p>1</p> <p>1</p>                                              | 10                          |
| 13  | <p>(a) (i) <math>3 \times 2</math><br/> (ii) <math>P_{22} + P_{31} = 3 + 6</math><br/> <math>= 9</math></p> <p>(b) (i) <math>5x + 2y = 5\,320</math> , <math>4x + 3y = 5\,040</math><br/> <math display="block">\begin{bmatrix} 5 &amp; 2 \\ 4 &amp; 3 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 5\,320 \\ 5\,040 \end{bmatrix}</math> <math display="block">\begin{bmatrix} x \\ y \end{bmatrix} = \frac{1}{(5)(3) - (2)(4)} \begin{bmatrix} 3 &amp; -2 \\ -4 &amp; 5 \end{bmatrix} \begin{bmatrix} 5\,320 \\ 5\,040 \end{bmatrix}</math> <math display="block">\begin{bmatrix} x \\ y \end{bmatrix} = \frac{1}{7} \begin{bmatrix} (3 \times 5\,320) + (-2 \times 5\,040) \\ (-4 \times 5\,320) + (5 \times 5\,040) \end{bmatrix}</math> <math display="block">\begin{bmatrix} x \\ y \end{bmatrix} = \frac{1}{7} \begin{bmatrix} 5\,880 \\ 3\,920 \end{bmatrix}</math> <math display="block">\begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 840 \\ 560 \end{bmatrix}</math> <math display="block">\begin{matrix} x = 840 \\ y = 560 \end{matrix}</math> (ii) <math>[2\ x] \begin{bmatrix} 840 \\ 560 \end{bmatrix} = 3\,000</math><br/> <math display="block">[(2 \times 840) + (x \times 560)] = 3\,000</math> <math display="block">1\,680 + 560x = 3\,000</math> <math display="block">560x = 3\,000 - 1\,680</math> <math display="block">560x = 1\,320</math> <math display="block">x = 1\,320 \div 560</math> <math display="block">x = 2.357 \approx 3</math> <p>Bilangan minimum tangki kecil yang diperlukan adalah 3.<br/> <i>The minimum number of small tanks required is 3.</i></p> </p> | <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> | 9                           |
| 14  | <p>(a) <math>y = \frac{15}{100} \times (\text{RM}6\,500 + \text{RM}4\,550 + \text{RM}1\,500)</math><br/> <math display="block">= \frac{15}{100} \times \text{RM}12\,550</math> <math display="block">= \text{RM}1\,882.50</math></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <p>1</p> <p>1</p>                                                       |                             |

| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Markah<br>Marks      | Markah Total<br>Total Marks |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-----------------------------|
|     | <p>(b) Aliran tunai bulanan keluarga Abu / Abu's family monthly cash flow</p> $= (\text{RM}6\,500 + \text{RM}4\,550 + \text{RM}1\,500) - (\text{RM}5\,250 + \text{RM}1\,882.50 + \text{RM}1\,200 + \text{RM}300 + \text{RM}400 + \text{RM}1\,800 + \text{RM}500 + \text{RM}900)$ $= \text{RM}12\,550 - \text{RM}12\,232.50$ $= \text{RM}317.50$                                                                                                                                                                                                                                                                                                                                                         | 1<br>1               | 8                           |
|     | <p>(c) (i) Jumlah defisit / Amount of deficit</p> $= (\text{RM}6\,500 + \text{RM}4\,550) - \left[ \text{RM}5\,250 + \left( \left( \frac{10}{100} \times \text{RM}6\,500 + \text{RM}4\,550 \right) + \text{RM}1\,200 + \text{RM}300 + \text{RM}400 + \text{RM}1\,800 + \text{RM}500 + \text{RM}900 \right) \right]$ $= \text{RM}11\,050 - (\text{RM}5\,250 + \text{RM}6\,205)$ $= \text{RM}11\,050 - \text{RM}11\,455$ $= -\text{RM}405$ <p>(ii) Mengurangkan perbelanjaan bagi barangan dapur / utiliti rumah / belanja petrol / pendidikan kanak-kanak / melancong / hiburan.<br/>Reduce expenses on groceries / home utilities / petrol expenses / children's education / travel / entertainment.</p> | 2<br><br>1<br>1      |                             |
| 15  | <p>(a) (i) Pantulan pada garis PT.<br/>Reflection on the PT line.</p> <p>(ii)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 2<br><br>1           |                             |
|     | <p>(b) Pembesaran pada pusat (0, 0) dengan faktor skala -2.<br/>Enlargement at the centre (0, 0) with scale factor of -2.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 3                    |                             |
|     | <p>(c) (i) Luas kain rentang<br/>Area of a banner</p> $= 50^2 \times \frac{5\text{ cm}}{100} \times \frac{2\text{ cm}}{100}$ $= 2\,500 \times 0.05\text{ m} \times 0.02\text{ m}$ $= 2.5\text{ m}^2$ <p>(ii) Kos cetakan 12 kain rentang<br/>Cost of printing for 12 banners</p> $= 2.5\text{ m}^2 \times 12 \times \frac{\text{RM}18}{\text{m}^2}$ $= \text{RM}540$ <p>RM540 RM600. Siva mempunyai wang yang cukup untuk menempah 12 kain rentang.<br/>RM540 RM600. Siva have enough money to print 12 banners.</p>                                                                                                                                                                                    | 1<br>1<br><br>1<br>1 | 10                          |

# Bahagian C

| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Markah<br>Marks              | Markah Total<br>Total Marks |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-----------------------------|
| 16  | <p>(a)</p> <p> Makanan<br/>Food Minuman<br/>Drinks Buku<br/>Books </p>                                                                                                                                                                                                                                                                                                                                                                                                                                             | 3                            |                             |
|     | <p>(b) (i) <math>z = 2x + 4 + 5y</math></p> <p>(ii) <math>y = \frac{1}{2}(2x + 4)</math></p> <p><math>y = x + 2</math></p> <p><math>x = y - 2</math></p> <p><math>2x + 4 + 5y = 42</math></p> <p><math>2(y - 2) + 4 + 5y = 42</math></p> <p><math>2y - 4 + 4 + 5y = 42</math></p> <p><math>7y = 42</math></p> <p><math>y = 42 \div 7</math></p> <p><math>y = 6</math></p> <p>Sarah membeli enam keping kupon RM5.<br/>Sarah bought six RM5 coupons.</p>                                                            | 1<br>1<br><br>1<br><br><br>1 |                             |
|     | <p>(c) (i) Min skor / Mean score</p> <p><math>= \frac{25 + 25 + 30 + 30 + 35 + 40 + 50 + 50 + 55 + 60 + 70 + 70}{12}</math></p> <p><math>= \frac{540}{12}</math></p> <p><math>= 45</math></p> <p>(ii) <math>\frac{540 + 2x + 45}{15} = 45 + 4</math></p> <p><math>\frac{585 + 2x}{15} = 49</math></p> <p><math>585 + 2x = 49 \times 15</math></p> <p><math>585 + 2x = 735</math></p> <p><math>2x = 735 - 585</math></p> <p><math>2x = 150</math></p> <p><math>x = 150 \div 2</math></p> <p><math>x = 75</math></p> | 1<br><br>1<br><br>1<br><br>1 |                             |

| No.     | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Markah<br>Marks                              | Markah Total<br>Total Marks |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-----------------------------|
| (d) (i) |  <p>Garis lurus <math>20x + 15y = 240</math> dilukis dengan betul.<br/>The straight line <math>20x + 15y = 240</math> is drawn correctly.</p> <p>Rantau dilorek dengan betul.<br/>The region is shaded correctly.</p> <p>(ii) Jumlah kutipan / Total amount collected<br/> <math>= (\text{RM}3 \times 30 \times x) + (\text{RM}2 \times 30 \times y)</math><br/> <math>= \text{RM}90x + \text{RM}60y</math></p> <p>Uji dengan koordinat (8, 5) / Test with coordinates (8, 5)<br/> <math>= \text{RM}90(8) + \text{RM}60(5)</math><br/> <math>= \text{RM}1\,020</math> (Sasaran dicapai / Target achieved)</p> <p>*Terima koordinat (11, 1), (10, 2), (9, 4), (8, 5) atau (6, 8).<br/> Accept coordinates (11, 1), (10, 2), (9, 4), (8, 5) or (6, 8).<br/> ATAU<br/> OR<br/> Uji dengan koordinat (3, 12) / Test with coordinates (3, 12)<br/> <math>= \text{RM}90(3) + \text{RM}60(12)</math><br/> <math>= \text{RM}990</math><br/> (Sasaran tidak dicapai / Target not achieved)</p> | <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> | 15                          |

| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Markah<br>Marks          | Markah Total<br>Total Marks |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-----------------------------|
| 17  | (a) Luas tapak perkhemahan / Area of the camping ground<br>$= (82 \times 60) \text{ m}^2 - \left(\frac{1}{2} \times 41 \times 30\right) \text{ m}^2$ $= 4\,305 \text{ m}^2$                                                                                                                                                                                                                                                                                                                                                                      | 2<br>1                   |                             |
|     | (b) Luas / Area = $(4x + 13)(3x)$<br>$36 = (4x + 13)(3x)$<br>$36 = 12x^2 + 39x$<br>$0 = 12x^2 + 39x - 36$<br>$0 = (4x - 3)(x + 4)$<br>$x = \frac{3}{4}, -4$ (tidak diterima / not accepted)<br>Kos memasang pagar / Cost of installing the fence<br>$= [(4x + 13) \text{ m} + (4x + 13) \text{ m} + 3x \text{ m} + 3x \text{ m}] \times \text{RM}14.50$<br>$= \left[4\left(\frac{3}{4}\right) + 13 + 4\left(\frac{3}{4}\right) + 13 + 3\left(\frac{3}{4}\right) + 3\left(\frac{3}{4}\right)\right] \times \text{RM}14.50$<br>$= \text{RM}529.25$ | 1<br><br>1<br><br>1<br>1 |                             |
|     | (c) (i) $a = \text{luas ruang khemah kecil} / \text{area of a small tent} = 5 \times 4$<br>$= 20$<br>$b = \text{luas ruang khemah besar} / \text{area of a big tent} = 6 \times 5$<br>$= 30$<br>$a = 20, b = 30$                                                                                                                                                                                                                                                                                                                                 | 1                        |                             |
|     | (ii)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                          |                             |
|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                          |                             |

| No. | Skema Pemarkahan<br>Marking Scheme                                                                                                                            | Markah<br>Marks | Markah Total<br>Total Marks |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------|
|     | Garis lurus $20x + 30y = 1\,500$ dilukis dengan betul.<br><i>Straight line <math>20x + 30y = 1\,500</math> drawn correctly.</i>                               | 1               | 15                          |
|     | Rantau dilorek dengan betul.<br><i>The region shaded correctly.</i>                                                                                           | 1               |                             |
|     | (iii) Bilangan maksimum khemah kecil / <i>Maximum number of small tent</i><br>= 45                                                                            | 1               |                             |
|     | (d) Harga pakej A / <i>Price for package A</i><br>= $(10 \times \text{RM}55) + (8 \times \text{RM}30)$<br>= $\text{RM}550 + \text{RM}240$<br>= $\text{RM}790$ | 1               |                             |
|     | Harga pakej B / <i>Price for package B</i><br>= $\text{RM}60 + \text{RM}40 + \text{RM}60 + \text{RM}40 + \text{RM}150 + \text{RM}550$<br>= $\text{RM}900$     | 1               |                             |
|     | Pakej A / <i>Package A</i> = $\text{RM}790$ , Pakej B / <i>Package B</i> = $\text{RM}900$                                                                     | 1               |                             |
|     | Pakej A dengan harga $\text{RM}790$ lebih menjimatkan.<br><i>Package A with the price of <math>\text{RM}790</math> will save more.</i>                        | 1               |                             |