

# KERTAS SOALAN PEPERIKSAAN SEBENAR SPM 2021-2022 SPM 2022 (SEPTEMBER)

FORMAT TERKINI

**+1 SET**  
KERTAS MODEL  
FORMAT INSTRUMEN  
SPM TERKINI

## MATEMATIK

Dwibahasa

### SIJIL PELAJARAN MALAYSIA 2021

#### KERTAS 1

1 D

A: 1 050 kilometer / kilometre =  $1.05 \times 10^3$  kilometer / kilometre → Salah / Incorrect

B: 0.75 teraliter / teralitre =  $7.5 \times 10^{-1}$  teraliter / teralitre → Salah / Incorrect

C: 0.089 fentometer / fentometre =  $8.9 \times 10^{-2}$  fentometer / fentometre → Salah / Incorrect

D: 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

$$P = \text{RM}3\ 000$$

$$R = 5\% \text{ atau } 0.05 \text{ setahun}$$

5% or 0.05 per year

$$n = 2$$

$$t = 5$$

$$\begin{aligned} MV &= P \left( 1 + \frac{r}{n} \right)^{nt} \\ &= 3000 \left( 1 + \frac{0.05}{2} \right)^{2(5)} \\ &= \text{RM}3\ 840.25 \end{aligned}$$

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*

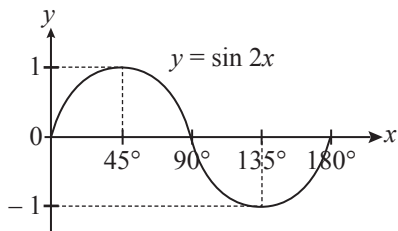
$$= \frac{\text{Imej / Image}}{\text{Objek / Object}}$$

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

$$= 3$$

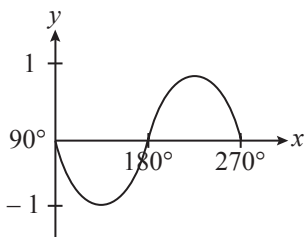
12 C

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

$$VPQ = VQR = VUR = 18$$

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

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

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

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

$$UST = 4.5$$

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

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

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

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

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

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

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

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

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

$$x = \frac{180^\circ - 70^\circ}{2}$$

$$= 55^\circ$$

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

30 C

$$1 : m$$

$$P = 1\,386$$

$$Q = 154$$

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

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

Imej / Image : Objek / Object

$$= 7 : 21$$

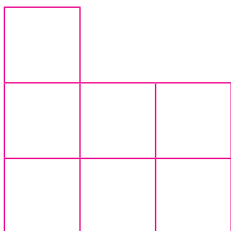
$$= \frac{7}{7} : \frac{21}{7}$$

$$= 1 : 3$$

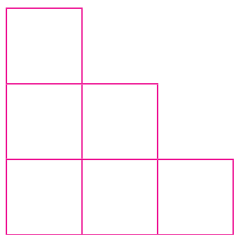
$$\therefore m = 3$$

31 D

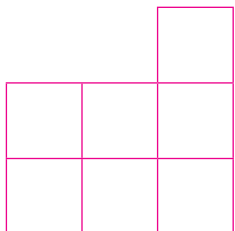
A:



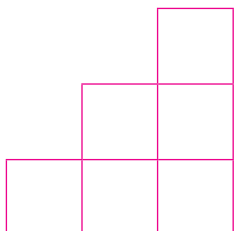
**B:**



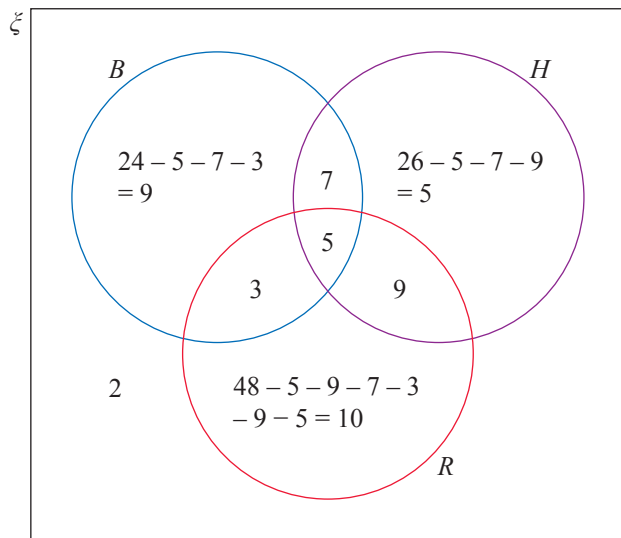
**C:**



**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

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

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

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

$$2x = 4$$

$$x = 2$$

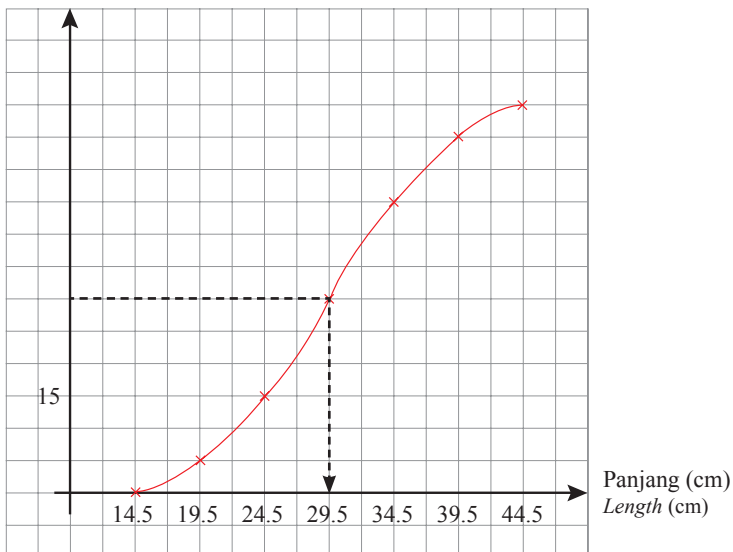
38 C

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

$$x = 60$$

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

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 Marking Scheme	Markah Marks	Markah Total Total Marks
1	4 sisi / sides = $4x + 4$ 1 sisi / side = $\frac{4x+4}{4} = x + 1$ Luas / Area = $(x + 1)(x + 1)$	1 1	2
2	(a) Beza di antara jujukan / <i>Difference between a sequence</i> $= \left(\frac{5}{3} - \frac{1}{3}\right) \div 2$ $= \frac{2}{3}$ $J = \frac{1}{3} + \frac{2}{3}$ $= \frac{3}{3}$ $= 1$ $K = \frac{5}{3} + \frac{2}{3}$ $= \frac{7}{3}$	1	3
	(b) Tambah $\frac{2}{3}$ kepada nombor yang sebelumnya. <i>Add <math>\frac{2}{3}</math> to the previous number.</i>	1	
3	$m = 0.25$ (a) Kecerunan / <i>Gradient</i> = $\frac{\text{Mengufuk / Horizontal}}{\text{Mencancang / Vertical}}$ $0.25 = \frac{1.25}{x}$ $x = 6$ $\tan \theta = \frac{1.5}{6}$ $\theta = 14.04^\circ$	1 1	4
	(b) $\sqrt{1.5^2 + 6^2} = 6.185$	2	

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

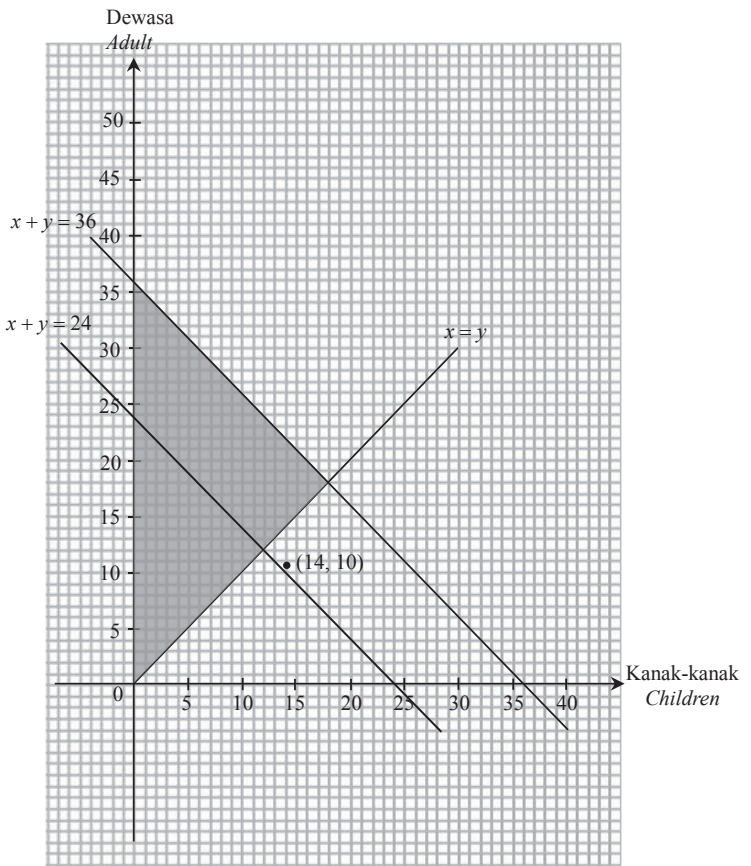
No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks
8	$\frac{7+5}{x} = \frac{1}{3}$ $\frac{12}{x} = \frac{1}{3}$ <p>Jumlah murid / <i>Number of students</i> = <math>3 \times 12</math> = 36</p> <p>Bilangan murid yang lulus / <i>Number of students who passed</i> = <math>36 - 12</math> = 24</p> <p>Lelaki / <i>Boys</i> = <math>\frac{24}{3} \times 1</math> = 8</p> <p>Perempuan / <i>Girls</i> = <math>\frac{24}{3} \times 2</math> = 16</p> <p><math>\therefore x = 8, y = 16</math></p>	1 1 1 1	4
9	<p>(a) Pendapatan / <i>Income</i> = 3 200 Perbelanjaan / <i>Expenses</i> = 1 950</p> <p>Baki / <i>Balance</i> = <math>3\,200 - 1\,950</math> = RM1 250</p> <p><math>14\,400 \div 12</math> bulan / <i>months</i> = RM1 200</p> <p>Muaz dapat mencapai matlamat kewangannya kerana baki gajinya melebihi simpanan yang diperlukan untuk beliau membeli motosikal tersebut. <i>Muaz was able to achieve his financial goals because his remaining salary exceeded the savings required for him to buy the motorcycle.</i></p>	1 1	4
	<p>(b) Pendapatan / <i>Income</i> = 4 000 Perbelanjaan / <i>Expenses</i> = 3 200</p> <p>Aliran tunai positif / <i>Positive cash flow</i> = 1 850 Baki pendapatan / <i>Balance income</i> = <math>4\,000 - 3\,200</math> = 800</p> <p>Pendapatan yang diperoleh daripada kerja sambilan = <math>1\,850 - 800</math> <i>Income earned from the part time job</i> = RM1 050</p>	1 1	
10	<p>(a) <math display="block">\frac{(42 \times 3) + (47 \times 6) + (52 \times m) + (57 \times 16) + (62 \times 10) + (67 \times 4)}{3 + 6 + m + 16 + 10 + 4} = 55.6</math></p> $\frac{2\,208 + 52m}{39 + m} = 55.6$ $2\,208 + 52m = 2\,168.4 + 55.6m$ $2\,208 - 2\,168.4 = 55.6m - 52m$ $39.6 = 3.6m$ $m = 11$	2 1	6
	<p>(b) <math>\sigma^2 =</math></p> $\frac{(3 \times 42^2) + (6 \times 47^2) + (11 \times 52^2) + (16 \times 57^2) + (10 \times 62^2) + (4 \times 67^2)}{3 + 6 + 11 + 16 + 10 + 4} - 55.6^2$ $= \frac{156\,670}{50} - 55.6^2$ $= 42.04$	2 1	

**Bahagian B**

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

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

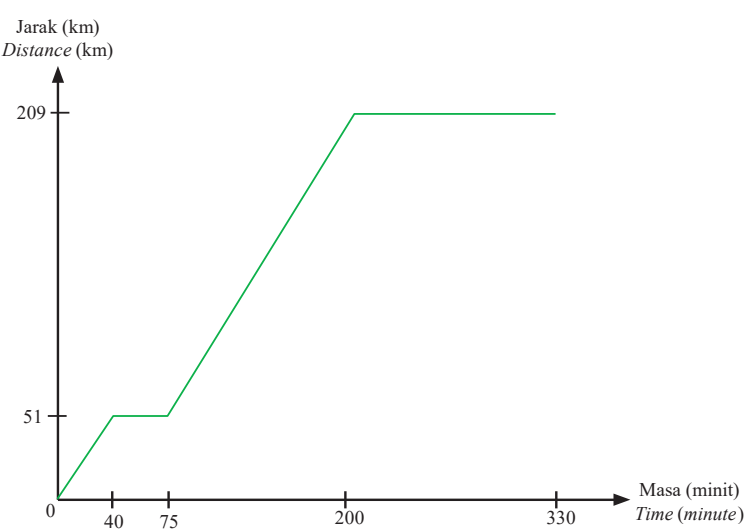
No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks
14	<p>(a) <math>p = \text{piza} / \text{pizza}, c = \text{kek cawan} / \text{cup cake}</math></p> $3p + 6c = 45 \dots\dots\dots ①$ $7p = 45 + c$ $7p - c = 45 \dots\dots\dots ②$ $\begin{pmatrix} 3 & 6 \\ 7 & -1 \end{pmatrix} \begin{pmatrix}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

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

10



No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks
	<p>(d) <math>\bar{x}_S = \frac{254 + 251 + 256 + 260 + 253}{5}</math>  <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>  <math>= 3.059</math></p> <p><math>\bar{x}_T = \frac{252 + 255 + 258 + 254 + 255}{5}</math>  <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>  <math>= 1.939</math></p> <p>Raket T. Nilai sisihan piawai yang lebih kecil menunjukkan laju bola tangkis lebih konsisten apabila menggunakan raket T.  <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>	<p>15</p>
17	<p>(a) (i) <math>5 : 35</math>  <math>= \frac{5}{5} : \frac{35}{5}</math>  <math>= 1 : 7</math></p> <p>(ii) <math>\frac{7}{35} = \frac{1}{5}</math></p> <p>(b) <math>g = \text{guru} / \text{teacher}, m = \text{murid} / \text{student}</math></p> <p><math>g = m + 40</math> ..... ①  <math>5g + 35m = 3\,000</math> ..... ②</p> <p><math>5(m + 40) + 35m = 3\,000</math>  <math>5m + 200 + 35m = 3\,000</math>  <math>40m = 3\,000 - 200</math>  <math>m = 70</math></p> <p><math>g = 70 + 40</math>  <math>g = 110</math></p> <p>Yuran yang perlu dibayar oleh seorang murid ialah RM70, manakala seorang guru ialah RM110.  <i>The fee that has to be paid by a student is RM70, while a teacher is RM110.</i></p> <p>(c) (i) Graf laju-masa : jarak = luas bawah graf  <i>Graph speed-time : distance = area under a graph</i></p> <p>Luas bawah graf / <i>Area under a graph</i>  <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>  <math>= 51 + 158</math>  <math>= 209 \text{ km}</math></p>	<p>1</p> <p>2</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks
	<p>(ii)</p> 	3	15
	<p>(d) Cikgu Linda: <math>P \rightarrow T \rightarrow S \rightarrow U \rightarrow R \rightarrow Q</math>  <math>= 15 + 21 + 20 + 11 + 9</math>  <math>= 76</math></p> <p>Cikgu Kumar: <math>P \rightarrow Q \rightarrow R \rightarrow U \rightarrow S \rightarrow T</math>  <math>= 13 + 9 + 11 + 20 + 21</math>  <math>= 74</math></p> <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.  <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  1  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**

$$\sphericalangle VST = 25^\circ$$

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

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

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

**15 B**

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

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

$$\tan x^\circ = -\frac{NR}{MR}$$

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

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

**16 B**

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

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

**17 D**

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

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

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

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

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

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

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

*It is a tessellation consisting of repeating spots.*

18 C

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

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

$$Q = \{D\}$$

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

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

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

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

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

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

$$y = -x + 3$$

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

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

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

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

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

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

$$= 46^\circ$$

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**

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

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

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

Skim pinjaman premium mempunyai ansuran bulanan yang lebih rendah.

*Premium loan scheme has lower monthly installment.*

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

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

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

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

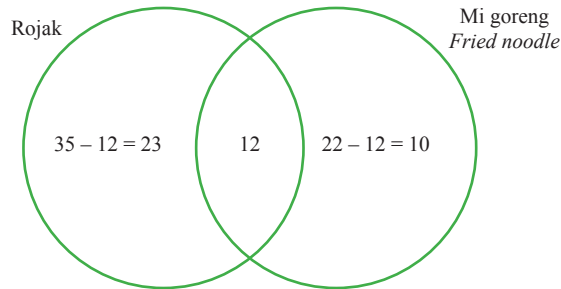
A:  $\sin 328^\circ = -0.5299192642$

B:  $\sin 302^\circ = -0.8480480962$

C:  $\sin 244^\circ = -0.8987940463$

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

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

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

$$= (2, 7)$$

$$P = \mathbf{D}$$

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

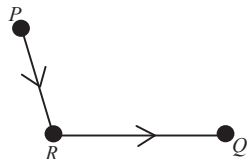
Pelepasan cukai meliputi caruman Kumpulan Wang Simpanan Pekerja (KWSP), rawatan perubatan dan yuran pengajian.

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

## Bahagian A

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks
1	<p>Katakan bilangan jualan majalah pada Januari = <math>j</math> Let the number of magazine sales in January = <math>j</math></p> <p>Katakan bilangan jualan majalah pada Februari = <math>f</math> Let the number of magazine sales in February = <math>f</math></p> <p>Katakan bilangan jualan majalah pada Mac = <math>m</math> Let the number of magazine sales in March = <math>m</math></p> <p><math>m = 4f</math> .....① <math>f + m = 2j</math> .....②</p> <p>Gantikan <math>m = 4f</math> dan <math>j = 400</math> ke dalam persamaan ②. Substitute <math>m = 4f</math> and <math>j = 400</math> into equation ②.</p> <p><math>f + 4f = 2(400)</math> <math>5f = 800</math> <math>f = 160</math></p> <p><math>m = 4(160)</math> <math>= 640</math></p> <p><math>j + f + m = 400 + 160 + 640</math> <math>= 1\ 200</math></p> <p style="text-align: center;"><b>atau / or</b></p> <p><math>m = 4f</math> .....① <math>f + m = 2j</math> .....② <math>m - 4f = 0</math> .....③ ③ - ②</p> <p><math>-5f = 2j</math> <math>5f = 2(400)</math> <math>f = 160</math></p> <p><math>m = 4(160)</math> <math>= 640</math></p> <p><math>j + f + m = 400 + 160 + 640</math> <math>= 1\ 200</math></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> <p>1</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> <p>1</p> <p>1</p>	<p>5</p>
2	<p>(a) <math>x = 10</math></p> <p>(b) <math>J = (0, 8)</math> <math>K = (10, 13)</math> <math>M = (10, 0)</math></p> <p><math>m_{JK} = \frac{13 - 8}{10 - 0}</math> <math>= \frac{1}{2}</math></p> <p><math>m_{JK} = m_{MN}</math> <math>y = mx + c</math></p> <p><math>0 = \frac{1}{2}(10) + c</math> <math>c = -5</math></p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks
	$y = \frac{1}{2}x + (-5)$ $y = \frac{x}{2} - 5$	1	4
3	<p>(a) <math>\frac{\text{Luas sektor / 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    1	4
	<p>(b) <math>\frac{\text{Panjang lengkok / Arc length}}{2\pi j} = \frac{\theta}{360^\circ}</math></p> $\frac{\text{Panjang lengkok / Arc length}}{2\left(\frac{22}{7}\right)(10.5)} = \frac{120^\circ}{360^\circ}$ <p>Panjang lengkok minor <math>LM = 22</math> cm The minor arc length of <math>LM</math></p>	1   1	
4	$MV = P\left(1 + \frac{r}{n}\right)^{nt}$ $= 10\,000 \left(1 + \frac{0.03}{4}\right)^{(4)(2)}$ $= 10\,615.99$ <p>Jumlah faedah yang diperoleh / The total interest received = RM10 615.99 – RM10 000 = RM615.99</p>	1   1 1	3
5	$\frac{1}{2} \times \text{tapak} \times \text{tinggi} = \text{luas segi tiga}$ $\frac{1}{2} \times \text{base} \times \text{height} = \text{area of triangle}$ $\frac{1}{2}(x)(2+x) = 7.5$ $x^2 + 2x - 15 = 0$ $(x-3)(x+5) = 0$ <p><math>x = 3, x = -5</math> <math>x &gt; 0, x = 3</math></p> $y = 2(2+x)$ $= 2(2+3)$ $= 10 \text{ cm}$	1 1 1  1  1	5
6	<p>(a) Antejadian / Antecedent: <math>a^2 - b^2 = (a - b)^2</math> Akibat / Consequence: <math>a^2 - b^2 = (a - b)(a + b)</math></p> <p>(b) Akas / Converse: 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: 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 1  1  1	4

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks
7	 <p>Jarak terdekat / <i>Shortest distance</i> = 6 km + 5.3 km = 11.3 km</p>	2 1	3
8	(a) Petrol (terima jawapan lain yang munasabah) ( <i>accept other reasonable answers</i> )	1	4
	(b) Jumlah pendapatan – Jumlah perbelanjaan <i>Total income – Total expenses</i> = RM1 700 + RM987.60 – (RM2 350 + RM860.90) = –RM523.30 (Aliran tunai negatif / <i>Negative cash flow</i> )	2 1	
9	P(Sekurang-kurangnya seorang ahli perempuan dipilih) <i>P(At least one girl member is chosen)</i> $= \left(\frac{2}{6} \times \frac{1}{5}\right) + \left(\frac{2}{6} \times \frac{4}{5}\right) + \left(\frac{4}{6} \times \frac{2}{5}\right)$ $= \frac{3}{5}$	2 1	3
10	(a) Ubahan langsung <i>Direct variation</i>	1	5
	(b) (i) $y \propto x$ $y = kx$ $15 = k(6)$ $k = \frac{5}{2}$ $y = \frac{5}{2}x$ (ii) $40 = \frac{5}{2}x$ $x = 16$	1 1 1 1	

### Bahagian B

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks
11	(a) Premium asas / <i>Basic premium</i> = RM339.10 + RM26 × $\frac{90\,000 - 1\,000}{1\,000}$ = RM2 653.10  NCD = RM2 653.10 × 55% = RM1 459.21  Premium kasar / <i>The gross premium</i> = RM2 653.10 – RM1 459.21 = RM1 193.89	2 1 1 1 1	

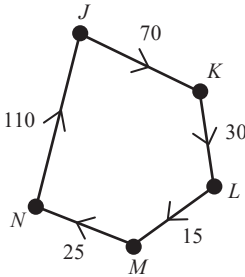
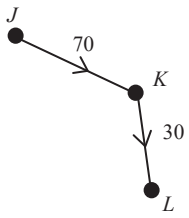


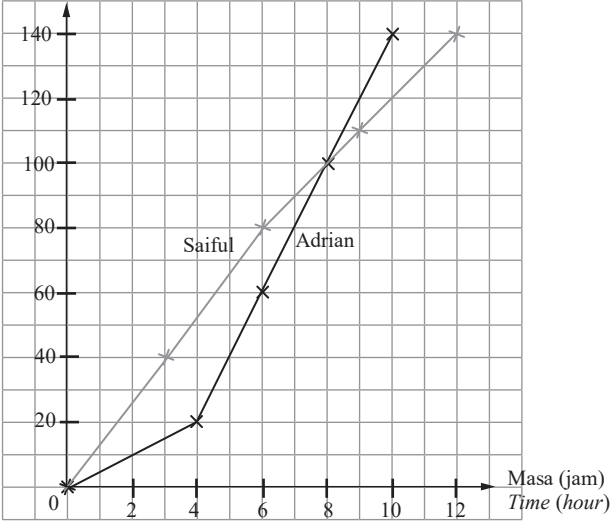
No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks							
	<p>(b) (i) Katakan umur Rokiah / <i>Let the age of Rokiah = R</i> Katakan umur Nuha / <i>Let the age of Nuha = N</i></p> $R = 3N$ $R - 3N = 0 \dots\dots\dots \textcircled{1}$ $\frac{R + N}{2} = 36$ $R + N - 72 = 0 \dots\dots\dots \textcircled{2}$ <p>(ii) <math>R - 3N = 0</math> <math>R + N = 72</math></p> $\begin{pmatrix} 1 & -3 \\ 1 & 1 \end{pmatrix} \begin{pmatrix} R \\ N \end{pmatrix} = \begin{pmatrix} 0 \\ 72 \end{pmatrix}$ $\begin{pmatrix} R \\ N \end{pmatrix} = \frac{1}{(1)(1) - (-3)(1)} \begin{pmatrix} 1 & 3 \\ -1 & 1 \end{pmatrix} \begin{pmatrix} 0 \\ 72 \end{pmatrix}$ $= \frac{1}{4} \begin{pmatrix} 216 \\ 72 \end{pmatrix}$ $= \begin{pmatrix} 54 \\ 18 \end{pmatrix}$ <p><math>R = 54</math> <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 <math>(2, -4)</math> dengan faktor skala <math>-\frac{1}{2}</math>. <i>Enlargement at the centre of <math>(2, -4)</math> with the scale factor of <math>-\frac{1}{2}</math>.</i></p> <p>(ii) Putaran <math>180^\circ</math> pada asalan. <i>Rotation of <math>180^\circ</math> at the origin.</i></p> <p>(b) Luas imej = <math>k^2 \times</math> Luas objek <i>Area of image = <math>k^2 \times</math> Area of object</i></p> $MNQSTU = \left(-\frac{1}{2}\right)^2 \times 125 \text{ cm}^2$ $= 31.25 \text{ cm}^2$	<p>3</p> <p>3</p> <p>2</p> <p>1</p>	<p>9</p>							
15	<p>(a)</p> <table border="1" data-bbox="232 1281 482 1728"> <thead> <tr> <th data-bbox="232 1281 482 1368">Titik tengah Midpoint</th> </tr> </thead> <tbody> <tr> <td data-bbox="232 1368 482 1426">3.5</td> </tr> <tr> <td data-bbox="232 1426 482 1485">5.5</td> </tr> <tr> <td data-bbox="232 1485 482 1544">7.5</td> </tr> <tr> <td data-bbox="232 1544 482 1603">9.5</td> </tr> <tr> <td data-bbox="232 1603 482 1662">11.5</td> </tr> <tr> <td data-bbox="232 1662 482 1728">13.5</td> </tr> </tbody> </table>	Titik tengah Midpoint	3.5	5.5	7.5	9.5	11.5	13.5	<p>1</p>	
Titik tengah Midpoint										
3.5										
5.5										
7.5										
9.5										
11.5										
13.5										

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

### Bahagian C

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks
16	<p>(a)</p>	3	

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks								
	<p>(b) (i) <math>Q = RM655 \times \frac{100}{10}</math>  <math>= RM6\ 550</math>            Jumlah pendapatan / Total income  <math>= RM6\ 550 + RM350</math>  <math>= RM6\ 900</math></p> <p>(ii) Aliran tunai / Cash flow  <math>= RM6\ 550 + RM350 - RM655 - RM300 - RM900 - RM1\ 050 -</math>  <math>RM600 - RM600 - RM500 - RM1\ 000 - RM500</math>  <math>= RM795</math></p> <p>Aliran tunai Hayati adalah positif, iaitu lebihan RM795.  <i>Hayati's cash flow is positive, having surplus RM795.</i></p> <p>(c)</p> <table border="1" data-bbox="235 617 978 917"> <tr> <td data-bbox="235 617 299 691"><b>M</b></td> <td data-bbox="299 617 978 691">Membayar RM2 800 <i>Pay RM2 800</i></td> </tr> <tr> <td data-bbox="235 691 299 766"><b>A</b></td> <td data-bbox="299 691 978 766">RM2 800 boleh dibayar dalam 5 bulan <i>RM2 800 can be paid within 5 months</i></td> </tr> <tr> <td data-bbox="235 766 299 840"><b>R</b></td> <td data-bbox="299 766 978 840">Simpanan 5 bulan adalah sebanyak RM3 975 <i>Savings of 5 months is RM3 975</i></td> </tr> <tr> <td data-bbox="235 840 299 917"><b>T</b></td> <td data-bbox="299 840 978 917">Dalam 5 bulan <i>Within 5 months</i></td> </tr> </table> <p>Hayati mencapai matlamatnya kerana dia mempunyai lebihan RM1 175 selepas membayar RM2 800.  <i>Hayati achieved her goal because she had surplus of RM1 175 after paying RM2 800.</i></p>	<b>M</b>	Membayar RM2 800 <i>Pay RM2 800</i>	<b>A</b>	RM2 800 boleh dibayar dalam 5 bulan <i>RM2 800 can be paid within 5 months</i>	<b>R</b>	Simpanan 5 bulan adalah sebanyak RM3 975 <i>Savings of 5 months is RM3 975</i>	<b>T</b>	Dalam 5 bulan <i>Within 5 months</i>	<p>1</p> <p>1</p> <p>1</p> <p>2</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> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	<p>15</p>
<b>M</b>	Membayar RM2 800 <i>Pay RM2 800</i>										
<b>A</b>	RM2 800 boleh dibayar dalam 5 bulan <i>RM2 800 can be paid within 5 months</i>										
<b>R</b>	Simpanan 5 bulan adalah sebanyak RM3 975 <i>Savings of 5 months is RM3 975</i>										
<b>T</b>	Dalam 5 bulan <i>Within 5 months</i>										
17	<p>(a) (i)</p>  <p>(Terima mana-mana jawapan yang munasabah)  <i>(Accept any reasonable answers)</i></p> <p>(ii)</p>  <p>(Terima mana-mana jawapan yang munasabah)  <i>(Accept any reasonable answers)</i></p>	<p>3</p> <p>1</p>									

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks
(b) (i)	<p>Jarak (km) Distance (km)</p>  <p>Masa (jam) Time (hour)</p> <p>(ii) Laju / Speed = <math>\frac{140 - 110}{12 - 9}</math> = <math>10 \text{ km j}^{-1} / \text{km h}^{-1}</math></p> <p>(iii) 100 km</p>	3   1 1 1	
(c) (i)	<p>RM30 000 – RM600 = RM29 400 <math>\text{RM29 400} \times \frac{20}{100} + \text{RM600} = \text{RM6 480}</math></p> <p>(ii) RM0 Kos rawatan RM450 adalah kurang daripada deduktibel RM600. <i>The treatment cost of RM450 is less than the deductible of RM600.</i></p>	1 1 1 1 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, ...

$$\begin{array}{cccc} & +3 & +5 & +7 \\ & \curvearrowright & \curvearrowright & \curvearrowright \\ 1 & & 4 & 9 & 16 & \dots \end{array}$$

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

$$\begin{array}{cccc} & +2 & +2 & +2 \\ & \curvearrowright & \curvearrowright & \curvearrowright \\ 2 & & 4 & 6 & 8 & \dots \end{array}$$

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

$$\begin{array}{cccc} & +3 & +3 & +3 \\ & \curvearrowright & \curvearrowright & \curvearrowright \\ 3 & & 6 & 9 & 12 & \dots \end{array}$$

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

$$\begin{array}{cccc} & \times 2 & \times 2 & \times 2 \\ & \curvearrowright & \curvearrowright & \curvearrowright \\ 4 & & 8 & 16 & 32 & \dots \end{array}$$

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**

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

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

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

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

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

$$\begin{aligned} \text{Premium kasar} &= \text{RM151.20} \times \frac{55}{100} \\ \text{Gross premium} &= \text{RM83.16} \end{aligned}$$

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

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

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

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

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

$a = -1$ , bentuk / shape 

$x = 3$  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

$$\text{Kadar perubahan laju} = -\frac{v-0}{12-3}$$

*The rate of change of speed*

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

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

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

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

$$P = Q$$

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

$$x = 6$$

$$x + y = 8$$

$$6 + y = 8$$

$$y = 8 - 6$$

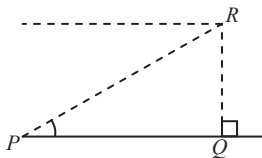
$$y = 2$$

$$z = x - y$$

$$z = 6 - 2$$

$$z = 4$$

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

$$\begin{aligned} x &= \angle L J N + \angle J L M \\ &= 60^\circ + 32^\circ \\ &= 92^\circ \end{aligned}$$

25 D

$P \rightarrow S$ : Pantulan / Reflection

$S \rightarrow R$ : Translasi / Translation

26 A

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

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

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

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

27 C

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

$$x = -60^\circ$$

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

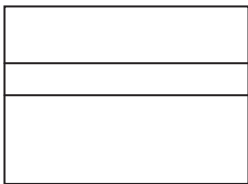
$$x = 120^\circ$$

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

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

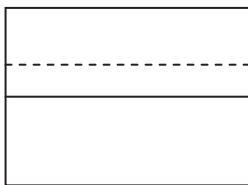
28 B

A:



← Salah / Wrong

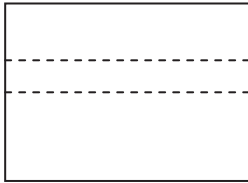
C:



← 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 Form III
Premis 1 <i>Premise 1</i>	Jika $p$ , maka $q$ <i>If <math>p</math>, then <math>q</math></i>
Premis 2 <i>Premise 2</i>	Bukan $q$ adalah benar <i>Not <math>q</math> is true</i>
Kesimpulan <i>Conclusion</i>	Bukan $p$ adalah benar <i>Not <math>p</math> is true</i>

$p: x = 3$

$q: x + 2 = 5$

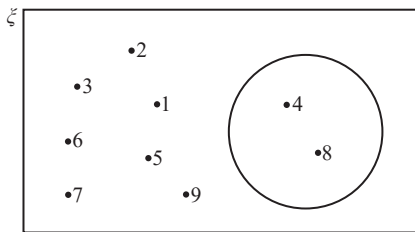
$\therefore$  Jika  $x = 3$  maka  $x + 2 = 5$

*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

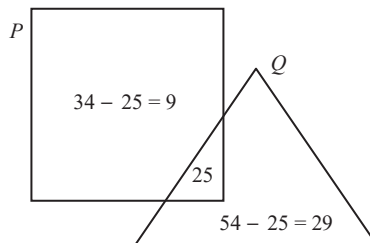
$$n(P) + n(Q) = 34 + 54$$

$$= 88$$

$$n(P \cap Q) = 88 - n(P \cup Q)$$

$$= 88 - 63$$

$$= 25$$



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> <i>Score</i>	2	3	4	5
<b>Kekerapan</b> <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

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

Kebarangkalian peserta mengambil bahagian dalam kedua-dua kuiz =  $\frac{8}{40}$   
*Probability of the participant takes part in both quizzes*

$$= \frac{1}{5}$$

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.

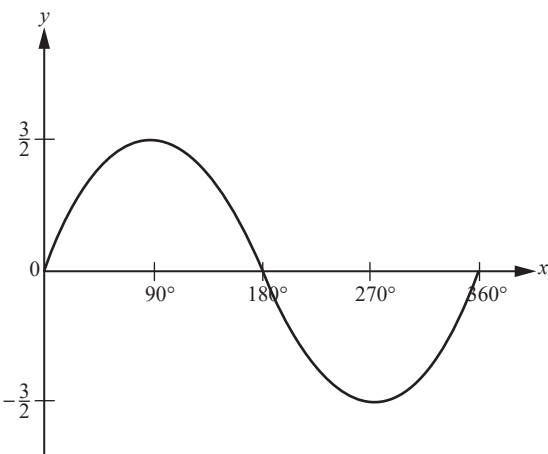
*From the graph, the marks is 61.5.*

**KERTAS 2**

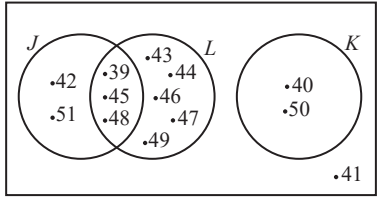
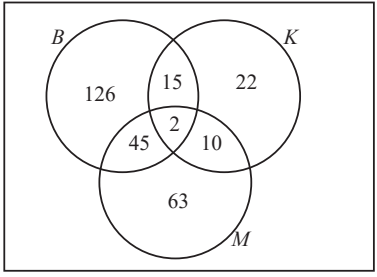
**Bahagian A**

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

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks
3	(a) Akas: Jika $2x - 3 = 5$ , maka $x = 4$ . <i>Converse: If <math>2x - 3 = 5</math>, then <math>x = 4</math>.</i>	1	4
	Kontrapositif: Jika $2x - 3 \neq 5$ , maka $x \neq 4$ . <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. <i>Evaluating financial status.</i>	1	4
	(b) Aliran tunai / <i>Cash flow</i> = RM8 500 + RM1 200 - $\left(\frac{12}{100} \times 8\,500\right)$ - RM4 350 - RM3 610 = RM720	2 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) $\frac{80}{100} \times 300\,000 = 240\,000$  Bayaran pampasan / <i>Amount of compensation</i> = $\frac{\text{Jumlah insurans yang telah dibeli}}{\text{Jumlah insurans yang harus dibeli}} \times \text{Jumlah kerugian} - \text{Deduktibel}$ $\frac{\text{Amount of insurance purchased}}{\text{Amount of insurance to be purchased}} \times \text{Total loss} - \text{Deductible}$ = $\frac{200\,000}{240\,000} \times 30\,000 - 2\,500$ = RM22 500	1     1 1	4
	(b) Penalti ko-insurans / <i>Co-insurance penalty</i> = $30\,000 - \left(\frac{200\,000}{240\,000} \times 30\,000\right)$ = RM5 000	1	
7	Luas kolam renang – Luas bahagian kanak-kanak = Luas bahagian dewasa <i>Area of the swimming pool – Area of children's section = Area of adults' section</i>  $\left[(7x - 2)\left(2 \times \frac{5}{2}x\right)\right] - 12\frac{4}{7} = 107\frac{3}{7}$ $35x^2 - 10x - 120 = 0$ $(7x + 12)(x - 2) = 0$ $x = -\frac{12}{7}$ atau / or $x = 2$  $\therefore x = 2$	1	4
		1	
		1	
		1	
8	Katakan pelitup muka = $m$ <i>Let face mask = <math>m</math></i>  Katakan pensanitasi tangan = $k$ <i>Let hand sanitizer = <math>k</math></i>  $3m + 4k = 148.40$  $2(2m + 6k) = 301.20$ $4m + 12k = 301.20$	1	

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total 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> <math>k = \text{RM}15.50</math></p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p>	<p>5</p>
9	<p>(a) (i) <math>M' = (3, 0)</math></p> <p>(ii) Putaran lawan arah jam pada pusat <math>(-4, 2)</math>. <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>. <i>Clockwise rotation at centre <math>(1, -7)</math>.</i></p> <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>. <i>Reflection on line <math>y = -x</math>.</i></p>	<p>1</p> <p>2</p> <p>2</p>	<p>5</p>
10	<p>(a)</p>  <p>(b) (i) <math>PR = \sqrt{30^2 + 15^2}</math> <math>= 33.54 \text{ cm}</math></p> <p>(ii) <math>\cos / \cos y^\circ = \frac{30}{33.54}</math> (Sukuan / <i>Quadrant II</i>) <math>\cos / \cos y^\circ = -0.89</math></p>	<p>2</p> <p>1</p> <p>1</p> <p>1</p>	<p>5</p>

**Bahagian B**

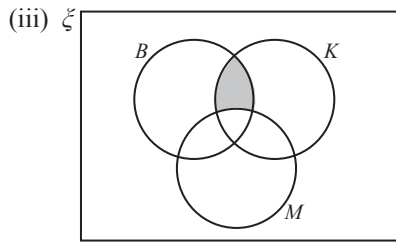
No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks
11	<p>(a) (i) <math>2y = -3x + 8</math>  <math>y = -\frac{3}{2}x + 4</math>  <math>m = -\frac{3}{2}</math></p> <p>(ii) <math>2(0) = -3x + 8</math>  <math>x = \frac{8}{3}</math>  <math>\therefore</math> Pintasan-<math>x</math> /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

No.

**Skema Pemarkahan**  
**Marking Scheme**

**Markah**  
**Marks**

**Markah Total**  
**Total Marks**



$$(B \cap K) \cap M' = 15$$

1

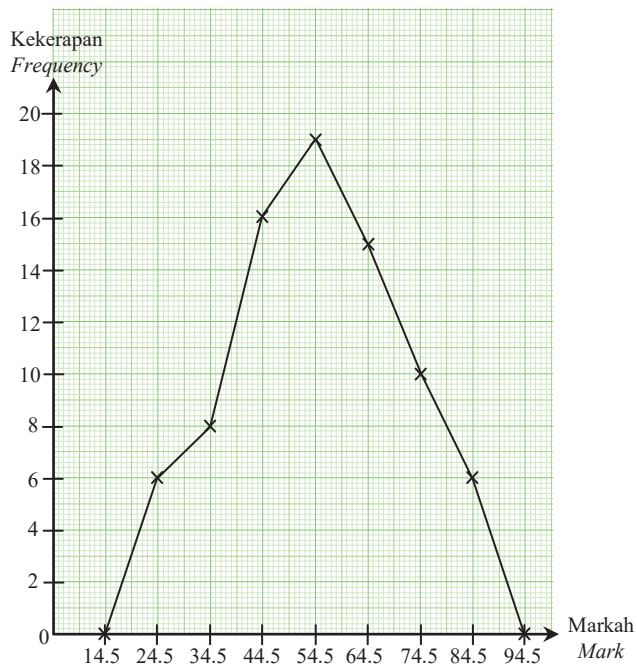
10

13 (a) (i)

Kekerapan Frequency
0
6
8
16
19
15
10
6
0

2

(ii)



4

(b) (i)

$$x = \sqrt{\frac{6(24.5)^2 + 8(34.5)^2 + 16(44.5)^2 + 19(54.5)^2 + 15(64.5)^2 + 10(74.5)^2 + 6(84.5)^2}{80}} - 54.75^2$$

$$= 16.65$$

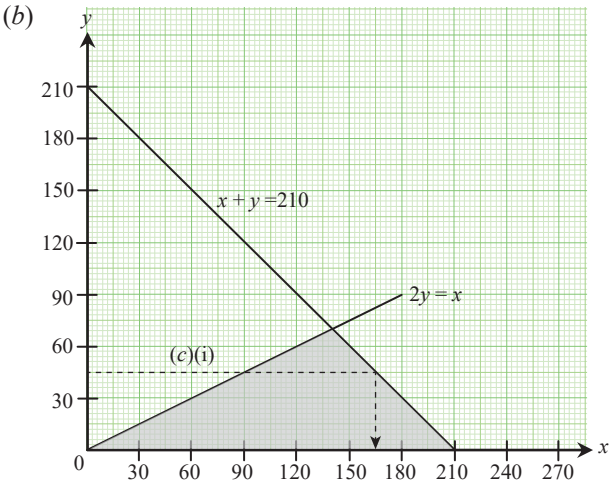
2

1

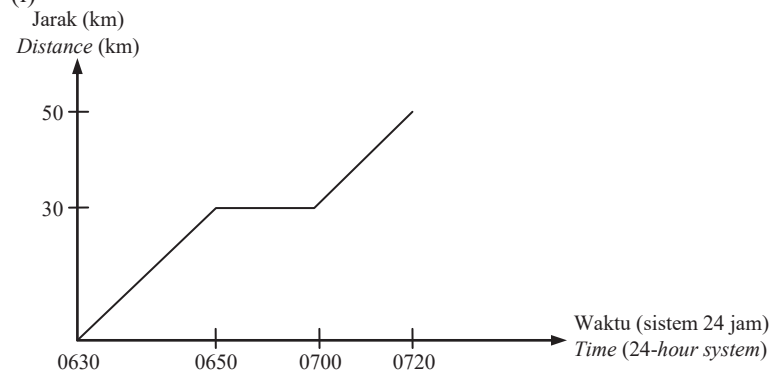
(ii) Prestasi murid pada tahun 2021 lebih konsisten.  
*The students performance in 2021 is more consistent.*

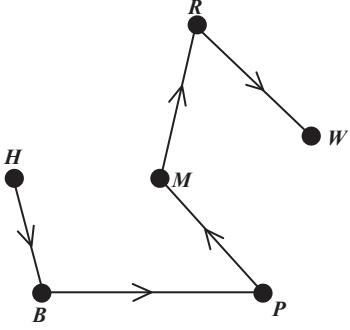
1

9

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks
14	<p>(a) <math>x + y \leq 210</math> <math>x \geq 2y</math></p> <p>(b) </p> <p>(c) (i) Bilangan maksimum murid sekolah menengah = 165 <i>The maximum number of secondary school students</i></p> <p>(ii) Jumlah yuran minimum yang diterima penganjur <i>Total minimum fees received by the organiser</i> = <math>(90 \times \text{RM}150) + (45 \times \text{RM}120)</math> = RM18 900</p>	<p>1 1</p> <p>4</p> <p>1 1</p>	<p>9</p>
15	<p>(a) Pendapatan bercukai Encik Farqan / <i>Encik Farqan's chargeable income</i> = RM77 600 – RM12 600 – RM9 000 – RM3 360 – RM2 500 = RM50 140</p> <p>(b) Cukai pendapatan / <i>Income tax</i> = <math>\text{RM}1\,800 + \left[ (\text{RM}50\,140 - \text{RM}50\,000) \times \frac{13}{100} \right] - \text{RM}840</math> = <math>\text{RM}1\,800 + \text{RM}18.20 - \text{RM}840</math> = RM978.20</p> <p>(c) (i) Potongan cukai bulanan (PCB) pada tahun tersebut <i>Monthly tax deduction (PCB) in that year</i> = <math>\text{RM}120 \times 12</math> = RM1 440</p> <p>Tidak perlu, RM1 440 melebihi RM978.20. <i>No need, RM1 440 exceeds RM978.20.</i></p> <p>(ii) LHDN perlu memulangkan lebih kepada Encik Farqan. <i>IRB should refund the excess deduction to Encik Farqan.</i></p>	<p>1 1</p> <p>2 1</p> <p>1 1 1</p>	<p>8</p>

## Bahagian C

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

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks
(b) (i)		2	
	(ii) Masa paling panjang = 17 + 15 + 72 + 10 + 45 minit / minutes The longest time	1	
	= 2 jam 39 minit / 2 hours 39 minutes	1	
(c)	<p>Jarak kayuhan santai / Distance of the recreational ride  <math>= 12.5 \text{ km} \times 1\,000</math>  <math>= 12\,500 \text{ m}</math></p> <p>Jejari tayar basikal R / Radius of tyre of bicycle R  <math>= \left(\frac{1}{2} \times \frac{600 \text{ mm}}{1\,000}\right) + (3 \text{ cm} \div 100)</math>  <math>= 0.3 \text{ m} + 0.03 \text{ m}</math>  <math>= 0.33 \text{ m}</math></p> <p>Jejari basikal S / Radius of bicycle S  <math>= \left[\left(\frac{3}{4} \times 0.6 \text{ m}\right) \div 2\right] + (3 \text{ cm} \div 100)</math>  <math>= 0.225 \text{ m} + 0.03 \text{ m}</math>  <math>= 0.255 \text{ m}</math></p> <p>Beza bilangan putaran lengkap antara kedua-dua roda basikal itu  Difference of the number of complete rotations between both bicycle wheels  <math>= \left(\frac{12\,500 \text{ m}}{2 \times \frac{22}{7} \times 0.255}\right) - \left(\frac{12\,500 \text{ m}}{2 \times \frac{22}{7} \times 0.33}\right)</math>  <math>= 1\,772.403176</math>  <math>= 1\,772</math></p>	1	
(d)	<p>Harga basikal di kedai TT Cycles / The price of a bicycle at TT Cycles shop  <math>= \left(\frac{95}{100} \times 650\right) + \left(\frac{85}{100} \times 650\right)</math>  <math>= \text{RM}1\,170</math></p> <p>Harga basikal di kedai The Wheel / The price of a bicycle at The Wheel shop  <math>= \left[\frac{85}{100} \times 2\left(\frac{5\,500}{7.9}\right)\right] + \frac{790}{7.9}</math>  <math>= \frac{93\,500}{79} + 100</math>  <math>= \text{RM}1\,283.54</math></p> <p>Kedai TT Cycles akan menjadi pilihan Encik Faez kerana lebih murah.  TT Cycles shop will be Encik Faez's choice because it is cheaper.</p>	1	
		1	15

**KERTAS 1**

**1 C**

$$9(4) - 6(3) + 8 = 36 - 18 + 8 \\ = 26$$

**2 A**

Setiap objek dalam domain mempunyai satu imej sahaja.  
*Each object in the domain has only one image.*

**3 A**

$$\frac{36^x}{216} = \frac{1}{6^x} \\ \frac{6^{2x}}{6^3} = \frac{1}{6^x} \\ 6^{2x-3} = 6^{-x} \\ 2x - 3 = -x \\ 3x = 3 \\ x = 1$$

**4 D**

$$124_6 \rightarrow 52_{10} \\ 567_8 \rightarrow 375_{10} \\ 52 + 375 = 427 \\ 427_1 \rightarrow 3202_5$$

**5 B**

$$P \propto \frac{Q}{R^2} \\ P = \frac{kQ}{R^2} \qquad P = \frac{4}{3} S \\ 1 = \frac{k(12)}{4^2} \qquad 4(3) = \frac{4}{3} S \\ 16 = 12k \qquad \frac{12(3)}{4} = S \\ k = \frac{4}{3} \qquad S = 9$$

**6 C**

$$\text{Laju purata / Average speed} = \frac{\text{Jumlah jarak / Total distance}}{\text{Jumlah masa / Total time}} \\ \text{Laju purata / Average speed} = \frac{\left(\frac{1}{2} \times 6 \times 4\right) + \left[\frac{1}{2} \times (6 + 22) \times 4\right] + (22 \times 2)}{10}$$

$$\text{Laju purata / Average speed} = \frac{112}{10}$$

$$\text{Laju purata / Average speed} = 11.2 \text{ m s}^{-1}$$

**7 B**

$$\text{Panjang LK / Length of LK} = \sqrt{13^2 - 12^2} \\ = 5 \text{ cm}$$

$$\text{Luas / Area} = \left(\frac{1}{2} \times 12 \times 19\right) - \left(\frac{1}{2} \times 5 \times 12\right) \\ = 114 \text{ cm}^2 - 30 \text{ cm}^2 \\ = 84 \text{ cm}^2$$

8 C

$$\begin{aligned} & \frac{(p-4) \times q}{2p \times q} - \frac{(p-2q) \times 2}{pq \times q} \\ &= \frac{pq - 4q - (2p - 4q)}{2pq} \\ &= \frac{pq - 4q - 2p + 4q}{2pq} \\ &= \frac{pq - 2p}{2pq} \end{aligned}$$

9 D

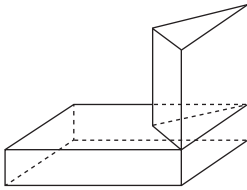
Jumlah sudut pedalaman / *Sum of interior angles*

$$\begin{aligned} &= (6 - 2) \times 180^\circ \\ &= 720^\circ \\ x &= 720^\circ - 270^\circ - 90^\circ - 43^\circ - 167^\circ - 101^\circ \\ &= 49^\circ \end{aligned}$$

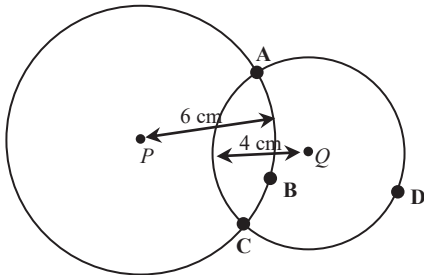
10 A

$$\begin{aligned} \angle EOF &= 180^\circ - 35^\circ - 35^\circ \\ &= 101^\circ \\ \angle EGF &= 110^\circ \div 2 \\ &= 55^\circ \\ \angle EFG &= 180^\circ - (30^\circ + 35^\circ) - 55^\circ \\ &= 60^\circ \\ x &= 60^\circ - 35^\circ \\ &= 25^\circ \end{aligned}$$

11 D



12 B



13 A

$$\begin{aligned} 4x + (0) &= 8 \\ x &= \frac{8}{4} \\ x &= 2 \end{aligned}$$

14 B

$$\begin{aligned} & 3.4 \times 10^{-5} - 0.57 \times 10^{-5} \\ &= 2.83 \times 10^{-5} \end{aligned}$$

15 C

Darjah bagi bucu / *Degree of vertex A* = 3  
 Darjah bagi bucu / *Degree of vertex B* = 3  
 Darjah bagi bucu / *Degree of vertex C* = 4  
 Darjah bagi bucu / *Degree of vertex D* = 4  
 Bilangan darjah / *Number of degrees* = 3 + 3 + 4 + 4  
 = 14

16 C

Kadar pengangguran  
*Unemployment rate*

17 B

75% daripada premium asas polisi komprehensif adalah kadar premium polisi pihak ketiga, kebakaran dan kecurian.  
*75% of the basic premium of comprehensive policy is the premium rate of third party, fire and theft policy from the basic premium.*

18 A

Komisen  
*Commissions*

19 D

$$p\sqrt{q} - 4p = p - 3\sqrt{q}$$

$$p\sqrt{q} + 3\sqrt{q} = p + 4p$$

$$\sqrt{q}(p + 3) = 5p$$

$$\sqrt{q} = \frac{5p}{p + 3}$$

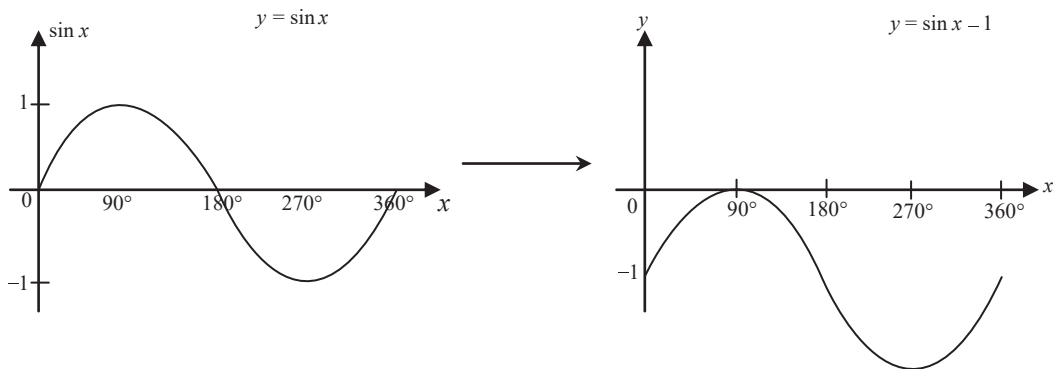
$$\sqrt{q} = \left(\frac{5p}{p + 3}\right)^2$$

20 A

$$n(J \cup K \cap L)' = 5 + 6 + 11 + 9 + 7$$

$$= 38$$

21 C



22 D

<b>Jenis buah</b> <i>Type of fruit</i>	Oren <i>Orange</i>	Epal <i>Apple</i>
<b>Nisbah</b> <i>Ratio</i>	9	: 7
<b>Bilangan buah</b> <i>Number of fruits</i>	$9 \times 3 = 27$	$7 \times 3 = 21$

Bilangan buah oren yang elok / *Number of good oranges*

$$= 27 - 7$$

$$= 20$$

23 B

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

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

$$x = 3, x = -2$$

24 A

$$\frac{1}{60} = \frac{\text{Ukuran skala / Scale measurement}}{\text{Ukuran sebenar / Actual measurement}}$$

$$\frac{1}{60} = \frac{\text{Ukuran skala / Scale measurement}}{22.2 \text{ m}}$$

$$\frac{1}{60} = \frac{\text{Ukuran skala / Scale measurement}}{22.2 \times 100}$$

$$\text{Ukuran skala / Scale measurement} = \frac{2\,200 \text{ cm}}{60}$$

$$\text{Ukuran skala / Scale measurement} = 37 \text{ cm}$$

25 A

$$\text{Min / Mean} = \frac{(23 \times 2) + (28 \times 8) + (33 \times 18) + (38 \times 26) + (43 \times 30) + (48 \times 10) + (53 \times 4)}{98}$$

$$= \frac{3\,834}{98}$$

$$= 39.12$$

26 D

Nombor perdana / *Prime number* = 2, 3, 5, 7

Nombor kuasa dua sempurna / *Perfect square number* = 9, 16, 25

$$\text{Kebarangkalian / Probability} = \frac{4}{8} + \frac{3}{8}$$

$$= \frac{7}{8}$$

27 D

Rebat cukai / *Tax rebate* = RM400

28 C

$$10 - 8x < x + 28$$

$$10 - 28 < x + 8x$$

$$-18 < 9x$$

$$x < -2$$

$$\therefore x = -1, 0, 1, 2$$

$$x + 28 \leq 40 - 5x$$

$$x + 5x \leq 40 - 28$$

$$6x \leq 12$$

$$x \leq 2$$

29 B

Jika  $x + 1 \neq 7$ , maka  $x \neq 6$

If  $x + 1 \neq 7$ , then  $x \neq 6$

30 D

Julat / *Range* = 1.9 - 1.0

$$= 0.9$$

1.0, 1.1, 1.1, 1.2, 1.2, 1.3, 1.4, 1.5, 1.5, 1.6, 1.7, 1.9

$$Q_1 = \frac{1.1 + 1.2}{2} = 1.15$$

$$Q_3 = \frac{1.5 + 1.6}{2} = 1.55$$

$$\begin{aligned} \text{Julat antara kuartil / Interquartile range} &= 1.55 - 1.15 \\ &= 0.4 \end{aligned}$$

$$\begin{aligned} \text{Beza julat dengan julat antara kuartil / Difference of range and interquartile range} \\ &= 0.9 - 0.4 \\ &= 0.5 \end{aligned}$$

31 C

$$\frac{60}{100} \times 20 = 12$$

Bilangan rantai  $\geq y$  cm ialah 12 utas.

*The number of the necklaces  $\geq y$  cm is 12.*

$$\therefore y = 39 \text{ cm}$$

32 B

Jumlah bilangan kek / Total number of cakes =  $x$

$$\frac{90^\circ}{360^\circ} \times x = 165$$

$$x = \frac{165 \times 360}{90}$$

$$x = 660$$

Bilangan kek perisa kopi / Number of coffee flavoured cakes

$$= 660 - 165 - 385$$

$$= 110$$

33 A

$$(2 \times -5) + (-2 \times 3x) + (3 \times 4x) = 8$$

$$-10 + (-6x) + 12x = 8$$

$$-10 + 6x = 8$$

$$6x = 18$$

$$x = 3$$

34 D

Kadar perubahan laju / Rate of change of speed

$$= \frac{3 - 15}{7 - 0}$$

$$= -\frac{12}{7}$$

35 B

Titik tengah / Midpoint

$$= \left( \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$= \left( \frac{4 + 2}{2}, \frac{6 + (-2)}{2} \right)$$

$$= (3, 2)$$

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

$$= \frac{7 - 2}{-5 - 3}$$

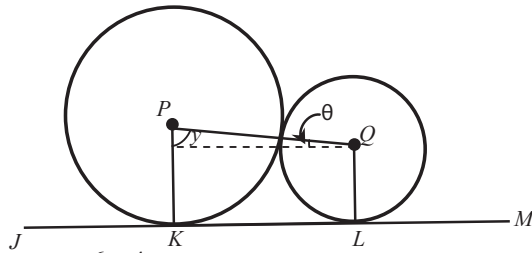
$$= -\frac{5}{8}$$

36 C

Jumlah wang simpanan / Total savings

$$\begin{aligned} &= \text{RM}9\,000 + \left(\frac{4}{100} \times 9\,000\right) \\ &= \text{RM}9\,000 + 360 \\ &= \text{RM}9\,360 \end{aligned}$$

37 D



$$\sin \theta = \frac{6-4}{6+4}$$

$$\sin \theta = \frac{2}{10}$$

$$\theta = 11.54^\circ$$

$$\begin{aligned} y &= 180^\circ - 90^\circ - 11.54^\circ \\ &= 78.46^\circ \end{aligned}$$

38 A

Isi padu hemisfera / Volume of hemisphere

$$\begin{aligned} &= \frac{1}{2} \times \frac{4}{3} \pi r^3 \\ &= \frac{2}{3} \pi r^3 \\ &= \frac{2}{3} \times \frac{22}{7} \times 3^3 \\ &= 56\frac{4}{7} \text{ cm}^3 \end{aligned}$$

Isi padu kon / Volume of cone

$$\begin{aligned} &= \frac{1}{3} \pi r^2 t \\ &= \frac{1}{3} \times \frac{22}{7} \times 3^2 \times 4 \\ &= 37\frac{5}{7} \text{ cm}^3 \end{aligned}$$

Isi padu bekas / Volume of the container

$$\begin{aligned} &= 56\frac{4}{7} \text{ cm}^3 + 37\frac{5}{7} \text{ cm}^3 \\ &= 94\frac{2}{7} \text{ cm}^3 \end{aligned}$$

Jumlah isi padu 20 000 bekas / Volume of 20 000 containers

$$\begin{aligned} &= 20\,000 \times 94\frac{2}{7} \text{ cm}^3 \\ &= 1\,885\,714.286 \text{ cm}^3 \\ &= \frac{1\,885\,714.286}{1\,000} \times 1 \text{ l} \\ &= 1\,885.714286 \\ &= 1\,885\frac{5}{7} \text{ l} \end{aligned}$$



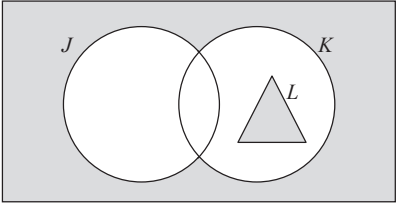
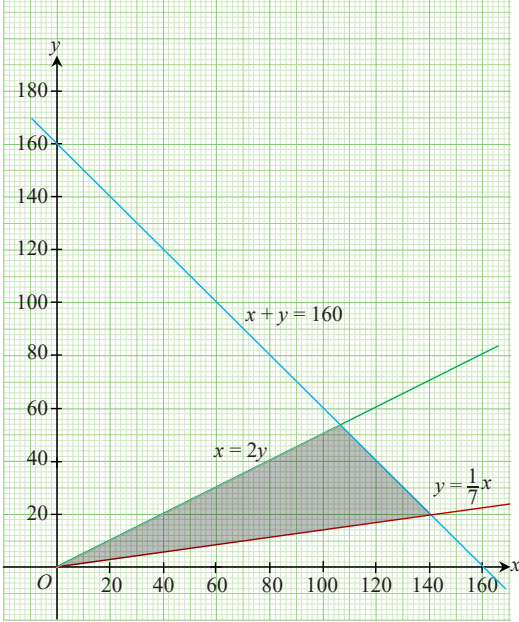
No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks
4	(a) Tempoh masa <i>Time-bound</i>	1	4
	(b) $RM3\ 300 - RM1\ 840 - RM360 = RM1\ 100$ $6 \times RM1\ 100 - RM7\ 000 = -RM400$  Dia tidak mencapai matlamat kewangannya. Dia mengalami kekurangan RM400. <i>He cannot achieve his financial goal. He has a shortage of RM400.</i>	1 1 1	
5	Isi padu silinder + isi padu hemisfera = $\pi j^2 t + \frac{2}{3} \pi j^3$ <i>Volume of cylinder + volume of hemisphere</i>  $= \left(\frac{22}{7} \times 14^2 \times 35\right) + \left(\frac{2}{3} \times \frac{22}{7} \times 14^3\right)$ $= 21\ 560 + 5\ 749\frac{1}{3}$ $= 27\ 309\frac{1}{3} \text{ cm}^3$	2	
	Jumlah bilangan guli = $27\ 309\frac{1}{3} \text{ cm}^3 - 195\frac{1}{42} \text{ cm}^3$ <i>The total number of marbles</i>	1	
	= 14	1	
6	(a) Premium tahunan Encik Gan <i>Encik Gan's monthly premium</i> $= \frac{90\ 000}{1\ 000} \times RM3.58 \div 12$ $= RM26.85$	1 1	5
	(b) Premium tahunan Puan Shapu <i>Puan Shapu's annual premium</i> $= \frac{85\ 000}{1\ 000} \times RM1.73$ $= RM147.05$  Premium tahunan Puan Phuva <i>Puan Phuva's annual premium</i> $= \frac{95\ 000}{1\ 000} \times RM2.24$ $= RM212.80$	1 1	
	Beza premium tahunan = $RM212.80 - RM147.05$ <i>The difference of annual premium</i> $= RM65.75$	1	
7	$10x(x - 2) = 350$ $10x^2 - 2x - 350 = 0$ $x^2 - 2x - 35 = 0$ $(x - 7)(x + 5) = 0$	1 1	1
	$x = 7$ atau / or $x = -5$ (Abaikan / Ignored)  $AB : AC = 3 : 5$ $\frac{AB}{10(7)} = \frac{3}{5}$ $AB = 42$	1	

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks
	Luas segi tiga $= \frac{1}{2} (7 - 2)(42)$ <i>Area of the triangle</i> $= 105 \text{ cm}^2$	1 1	5
8	(a) $\theta = 37^\circ 58', (180^\circ - 37^\circ 58')$ $= 37^\circ 58', 142^\circ 2'$ (b) $\theta = (180^\circ - 50^\circ 35') - (360^\circ - 50^\circ 35')$ $= 129^\circ 25', 309^\circ 25'$	1 1 1 1	4
9	$I = Prt$ $= 7\,000 \times \frac{5}{100} \times 4$ $= \text{RM1 400}$ $MV = P\left(1 + \frac{r}{n}\right)^{nt}$ $= 7\,000\left(1 + \frac{0.05}{4}\right)^{4(4)}$ $= \text{RM8 539.23}$ Faedah = RM8 539.23 – RM7 000 <i>Interest</i> $= \text{RM1 539.23}$ Beza faedah = RM1 539.23 – RM1 400 <i>Difference of interest</i> $= \text{RM139.23}$	1 1 1 1 1	5
10	(a) $\frac{24}{30} \times \frac{23}{29}$ $= \frac{92}{145}$ (b) $\left(\frac{6}{30} \times \frac{24}{29}\right) + \left(\frac{24}{30} \times \frac{6}{29}\right)$ $= \frac{48}{145}$	1 1 1 1	4

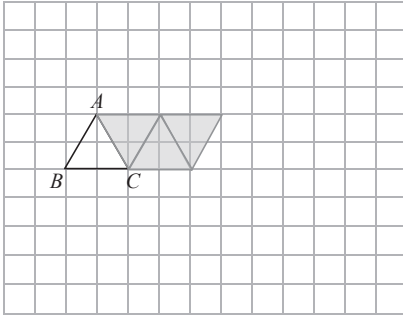
### Bahagian B

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks								
11	(a) <table border="1" style="margin-left: 20px;"> <tr> <td><math>x</math></td> <td><math>-2</math></td> </tr> <tr> <td><math>y</math></td> <td><math>-1</math></td> </tr> <tr> <td><math>x</math></td> <td><math>2</math></td> </tr> <tr> <td><math>y</math></td> <td><math>15</math></td> </tr> </table>	$x$	$-2$	$y$	$-1$	$x$	$2$	$y$	$15$	1 1	
$x$	$-2$										
$y$	$-1$										
$x$	$2$										
$y$	$15$										

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks
(b)		4	
	(c) (i) 22 (ii) -2.75, 1.45	1 2	9
12	<p>(a) Katakan kek vanila = <math>x</math>, kek coklat = <math>y</math>  <i>Let vanilla cake = <math>x</math>, chocolate cake = <math>y</math></i></p> $28x + 24y = 194$ $16x + 12y = 104$ $\begin{bmatrix} 28 & 24 \\ 16 & 12 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 194 \\ 104 \end{bmatrix}$ $\begin{bmatrix} x \\ y \end{bmatrix} = \frac{1}{(28)(12) - (24)(16)} \begin{bmatrix} 12 & -24 \\ -16 & 28 \end{bmatrix} \begin{bmatrix} 194 \\ 104 \end{bmatrix}$ <p><math>x = \text{RM}3.50</math>  <math>y = \text{RM}4</math></p>	1 1 1 1 1 1	
	(b) $\begin{bmatrix} 6 & 7 \end{bmatrix} \begin{bmatrix} 3.5 \\ 4 \end{bmatrix}$ $= 49$ Duit Amir cukup kerana RM50 melebihi RM49. <i>Amir's money is enough because RM50 exceeds RM49.</i>	1 1 1	9
13	<p>(a) <math>x = 17 - 5</math>  <math>= 12</math></p> <p><math>y = 21 - 12</math>  <math>= 9</math></p> <p><math>z = 40 - 12 - 5 - 7 - 9</math>  <math>= 7</math></p>	1 1 1	

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks
	(b) (i)  (ii) $5 + 9$ $= 14$	3  1 1	8
14	(a) $x \geq 2y$  $x + y \leq 160$  $y \geq \frac{1}{7}x$  (b) Lukis paksi-x dan paksi-y dengan skala yang betul. <i>Draw x-axis and y-axis with the correct scale.</i>    Garis lurus $x + y = 160$ dilukis dengan betul. <i>The straight line <math>x + y = 160</math> is drawn correctly.</i>  Garis lurus $x = 2y$ dilukis dengan betul. <i>The straight line <math>x = 2y</math> is drawn correctly.</i>  Garis lurus $y = \frac{1}{7}x$ dilukis dengan betul. <i>The straight line <math>y = \frac{1}{7}x</math> is drawn correctly.</i>  Rantau dilorek dengan betul. <i>The region is shaded correctly.</i>	1  1  1  1  1  1  1	10
	(c) (i) 140 (ii) 20	1 1	10

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks
15	(a) (i) Putaran 90 lawan arah jam pada pusat (6, 9). <i>A 90° counter-clockwise rotation at the center (6, 9).</i>	3	
	(ii) Pembesaran pada pusat (10, 9) dengan faktor skala 2. <i>Enlargement at the center (10, 9) with a scale factor of 2.</i>	3	
(b) Tiga segi tiga sama sisi dilukis dengan saiz yang betul. <i>Three equilateral triangles are drawn with the correct size.</i>	3		



### Bahagian C

No.	Skema Pemarkahan Marking Scheme	Markah Marks	Markah Total Total Marks
16	(a) (i) Ahli Kelab STEM / <i>STEM Club members</i> = $x$ Ahli Kelab Kewangan / <i>Finance Club members</i> = $\frac{1}{4}x$ Ahli Kelab Seni / <i>Art Club members</i> = 2  $x + \frac{1}{4}x + 2 = 32$ $\frac{5}{4}x = 30$ $x = 24$  Ahli Kelab Kewangan / <i>Finance Club members</i> = $\frac{1}{4}(24)$ $= 6$  $\therefore$ Nisbah / <i>Ratio</i> = 24 : 6 : 2	1 1 1	
	(ii) Peratus ahli Kelab STEM / <i>STEM Club members</i> = $\frac{24}{32} \times 100$ $= 75\%$	1	
(b)	Katakan bilangan murid lelaki / <i>Let the number of male students</i> = $x$ Katakan bilangan murid perempuan / <i>Let the number of female students</i> = $y$ $5x + 4y = 109 \dots \textcircled{1}$ $x + y = 24 \dots \textcircled{2}$ $\textcircled{2} \times 5 : 5x + 5y = 120 \dots \textcircled{3}$ $\textcircled{3} - \textcircled{1} : y = 11$ $x = 24 - 11$ $= 13$  Bilangan murid lelaki Tingkatan 1 / <i>Number of Form 1 male students</i> $= 5 \times 13$ $= 65$  Bilangan murid perempuan Tingkatan 1 / <i>Number of Form 1 female students</i> $= 4 \times 11$ $= 44$	1 1 1 1	



No.	Skema Pemarkahan <i>Marking Scheme</i>	Markah <i>Marks</i>	Markah Total <i>Total Marks</i>
	$N = \frac{20Q}{R}$	1	15
	(ii) $60 = \frac{20Q}{10}$	1	
	$Q = 30$	1	
	(d) $(1 \times 2^2) + (1 \times 2^1) + (0 \times 2^0) = 6$	1	
	$(2 \times 3^1) + (1 \times 3^0) = 7$	1	
	$(6 \times \text{RM}5) + (7 \times \text{RM}8)$ $= \text{RM}86$	1 1	