TUISYEN RAKYAT SELANGOR 2021

MATEMATIK

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Form 4

Form 5

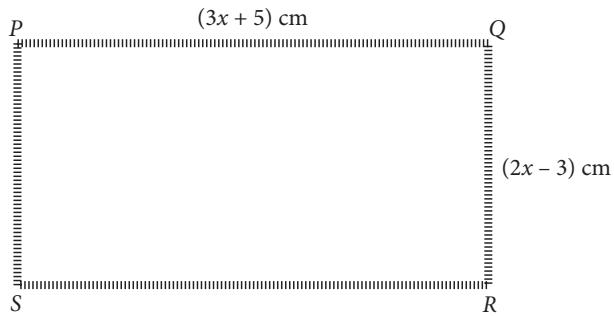
1. Solve each of the following completely.
Selesaikan setiap yang berikut selengkapnya.

[4 *marks* for each questions]
[4 *markah bagi setiap soalan*]

(a) $x^2 + 8x - 20 = 0$	(b) $y^2 + 7y + 12 = 0$
(c) $p^2 - 4p - 32 = 0$	(d) $q^2 - 9q + 20 = 0$
(e) $12e^2 + 14e - 10 = 0$	(f) $16f^2 - 28f + 6 = 0$
(g) $6g^2 + 19g + 10 = 0$	(h) $2h^2 - 7h - 30 = 0$

(i) $\frac{m^2}{4} = m + 3$	(j) $n^2 - n = 12$
(k) $(n - 6)^2 = 9$	(l) $5(1 + x) = 2x^2 - 2$
(m) $5 = \frac{2x^2 - 8x}{1 - x}$	(n) $\frac{y - 1}{7 - y} = \frac{4}{y}$
(o) $-\frac{2}{3h - 5} = \frac{h}{3h - 1}$	(p) $\frac{20 - 8k}{k - 5} = 3k$

2. The diagram below shows a photo frame bought by Suhaili.
Rajah di bawah menunjukkan sebuah bingkai gambar yang dibeli oleh Suhaili.



(a) Express the area, L, of the photo frame in terms of x.
Ungkap luas, L, bingkai gambar itu dalam sebutan x.

[2 *marks*/*markah*]

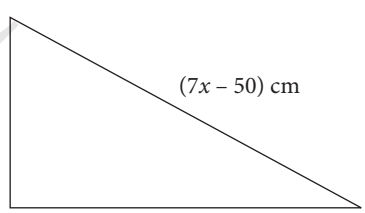
Answer/*Jawapan*:

(b) Given the area of the frame is 1 350 cm^2, calculate the value of PQ.
Diberi luas bingkai itu ialah 1 350 cm^2, hitung nilai PQ.

[4 *marks*/*markah*]

Answer/*Jawapan*:

3. The diagram below shows a piece of land in the shape of a right-angled triangle.
Rajah di bawah menunjukkan sebidang tanah berbentuk segi tiga bersudut tegak.



Given the length and width is $(4x)$ m and $(5x + 50)$ m respectively. The landowner plans to install a fence to prevent trespassing. Prove that a total of 2 400 metres of fence is needed for that purpose.
Diberi panjang dan lebar masing-masing berukuran (4x) m dan (5x + 50) m. Pemilik tanah tersebut merancang untuk memasang pagar untuk mengelak pencerobohan. Buktikan bahawa sejumlah 2 400 meter pagar diperlukan bagi tujuan itu.

[5 *marks*/*markah*]

Answer/*Jawapan*:

4. A taxi travels from city *X* to city *Y* for 180 km at a certain speed. On the way home, the taxi increases its speed by 15 kmh^{-1} and will reach city *X* 24 minutes earlier than the drive to city *Y*. Calculate the speed of the taxi, in kmh^{-1}, for the journey from city *X* to city *Y* and from city *Y* to city *X*.
Sebuah teksi bergerak dari bandar X ke bandar Y sejauh 180 km dengan kelajuan tertentu. Dalam perjalanan pulang, teksi itu meningkatkan kelajuannya sebanyak 15 kmj^{-1} dan akan sampai ke bandar X, 24 minit lebih awal dari pemanduan pergi ke bandar Y. Hitung laju teksi itu, dalam kmj^{-1}, untuk perjalanan dari bandar X ke bandar Y dan dari bandar Y ke bandar X.

[5 *marks*/*markah*]

Answer/*Jawapan*:

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5. Sofian's current age is $(2x + 3)$ times Mastura's age. Given that Mastura's current age is $(x + 5)$ years and 6 years ago, the sum of their ages is 44 years.
Umur Sofian sekarang ialah $(2x + 3)$ kali umur Mastura. Diberi bahawa umur Mastura sekarang ialah $(x + 5)$ tahun dan 6 tahun yang lalu, hasil tambah umur mereka ialah 44 tahun.

(a) Calculate the value of x.
Hitung nilai x.

[4 *marks*/*markah*]

Answer/*Jawapan*:

(b) Calculate the sum of their ages in the next 10 years.
Hitung jumlah umur mereka pada 10 tahun akan datang.

[2 *marks*/*markah*]

Answer/*Jawapan*:

6. The cost to watch the Malaysia Cup final is RM2 700 including the payment to charter a bus and the final match tickets. When 5 supporters cancel the plan to join the group at the last minute, each supporter in the group has to bear an additional cost of RM7.50. Calculate the original number of supporters who registered for the group.
Kos bagi menyaksikan perlawanan akhir Piala Malaysia ialah RM2 700 untuk tujuan bayaran sewaan sebuah bas dan tiket perlawanan akhir. Apabila 5 orang penyokong membatalkan hasrat untuk mengikuti rombongan itu pada saat akhir, setiap penyokong yang mengikuti rombongan itu terpaksa menanggung tambahan kos sebanyak RM7.50. Hitung bilangan asal penyokong yang mendaftar untuk rombongan tersebut.

[6 *marks*/*markah*]

Answer/*Jawapan*:

Video PdPR

1. Express $145_8 = (1 \times 8^2) + (4 \times 8^1) + (5 \times 8^0)$ in base 10.
Ungkapkan $145_8 = (1 \times 8^2) + (4 \times 8^1) + (5 \times 8^0)$ dalam asas 10.

=

=

[2 *marks*/*markah*]

---

2. Express $6^4 + 18$ as a number in base 6.
Ungkapkan $6^4 + 18$ sebagai suatu nombor dalam asas 6.

[3 *marks*/*markah*]

Answer/*Jawapan*:

---

3. Express 1020_4 to a number in base 7.
Ungkapkan 1020_4 kepada nombor dalam asas 7.

[2 *marks*/*markah*]

Answer/*Jawapan*:

---

4. Given $Q_6 = 100110_2$ with Q is an integer. Find the value of Q.
Diberi $Q_6 = 100110_2$ dengan keadaan Q ialah integer. Cari nilai Q.

[2 *marks*/*markah*]

Answer/*Jawapan*:

5. Arrange the following numbers in ascending order.
Susun nombor-nombor berikut dalam urutan menaik.

32_5	47_8	20_{10}	11110_2

[2 *marks*/*markah*]

Answer/*Jawapan*:

---

6. Complete the sequence of conversion of 237_{10} to a number in base 5.
Lengkapkan aturan penyelesaian penukaran 237_{10} kepada nombor dalam asas 5.

[4 *marks*/*markah*]

5	237	235	 2
5		45	 2
5	9		 4
5	1	0	
	0		

=

---

7. Solve each of the following operation and give the answer same as its base.
Selesaikan setiap operasi yang berikut dan berikan jawapan sama seperti asasnya.

[8 *marks*/*markah*]

(a) $241_4 + 24_5$

(b) $4003_6 + 451_6$

(c) $4623_7 + 405_7$

(d) $12483_9 + 6074_9$

(e) $11011101_2 - 11110_2$

(f) $4312_5 - 224_5$

(g) $15423_8 - 1653_8$

(h) $2212_3 - 122_3$

8. Find the value of M for each of the following:
Cari nilai M bagi setiap yang berikut:

[8 *marks*/*markah*]

(a) $1010110_2 - M_2 = 101101_2$

(b) $M_9 - 612_4 = 12021_3$

(c) $M_5 + 453_7 = 763_8$

(d) $1M027_8 - 5425_6 = 15604_7$

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9. The diagram below shows two models of watch selected by Zakiah.
Rajah di bawah menunjukkan dua model jam yang dipilih oleh Zakiah.

(a) After a discount, Zakiah has to pay $RM410_4$ if she chooses to buy the Chieko model watch and $RM132_7$ if she buys a Kolex model watch. Which watch gives the biggest discount?
Zakiah perlu membayar $RM410_4$ jika dia memilih untuk membeli jam model Chieko dan $RM132_7$ jika membeli jam model Kolex selepas diberikan diskaun. Jam yang manakah memberikan diskaun yang lebih besar?

[4 *marks*/*markah*]

Answer/*Jawapan*:

(b) Zakiah pays using two bank notes worth RM50. Calculate the balance of money, in RM, received by Zakiah, expressed in base 3.
Zakiah membayar menggunakan dua keping wang kertas bernilai RM50. Hitung baki wang, dalam RM, yang diterima oleh Zakiah, diungkap dalam asas 3.

[2 *marks*/*markah*]

Answer/*Jawapan*:

10. Salmiah bought a handbag from Fatin for RM990, after being given a 40% discount.
Salmiah membeli sebuah beg tangan daripada Fatin dengan harga RM990, selepas diberikan diskaun sebanyak 40%.

(a) Calculate the original price of the handbag in base eight.
Hitung harga asal beg tangan itu dalam asas lapan.

[5 *marks*/*markah*]

Answer/*Jawapan*:

(b) Although a discount has been given for the sale of the handbag, Fatin still earns a profit of 50% of its cost price. Find the cost price of the handbag. Give your answer in base 4.
Walaupun potongan diskaun telah diberikan untuk penjualan beg tangan tersebut, Fatin masih memperoleh keuntungan sebanyak 50% daripada harga kosnya. Cari harga kos beg tangan itu. Beri jawapan anda dalam asas 4.

[4 *marks*/*markah*]

Answer/*Jawapan*:

Video PdPR

1. Determine whether the following statements are true or false.
Tentukan sama ada pernyataan berikut benar atau palsu.

(a) A cube has four axes of symmetry.
Sebuah kubus mempunyai empat paksi simetri. .....

(b) All states in Malaysia have sultans.
Semua negeri di Malaysia mempunyai sultan. .....

(c) Some of the national badminton players are professionals.
Sebahagian daripada pemain badminton negara adalah profesional. .....

(d) $4 + 12(2) = 28$ and $(6)^2 = 36$
$4 + 12(2) = 28$ dan $(6)^2 = 36$ .....

(e) $3m + 7 = 10m$ and 64 are perfect square numbers.
$3m + 7 = 10m$ dan 64 ialah nombor kuasa dua sempurna. .....

(f) The sun rises on the west or a year has 12 months.
Matahari terbit sebelah barat atau setahun mempunyai 12 bulan. .....

(g) The pentagon has 9 sides or the decagon has 10 sides.
Pentagon mempunyai 9 sisi atau dekagon mempunyai 10 sisi. .....

[7 *marks*/*markah*]

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2. Complete the following statements using the quantification "all" or "some" to make a statement as given in [ ].
Lengkapkan pernyataan berikut menggunakan pengkuantitian "semua" atau "sebilangan" untuk menjadikan suatu pernyataan seperti yang diberikan dalam [ ].

(a) ..... polygons have 8 diagonals.

..... *poligon mempunyai 8 pepenjuru.* [true / *benar*]

(b) ..... months have at least 28 days.

..... *bulan mempunyai sekurang-kurangnya 28 hari.* [true / *benar*]

(c) ..... prime numbers are odd numbers.

..... *nombor perdana ialah nombor ganjil.* [true / *benar*]

(d) ..... even numbers can be divided exactly by four.

..... *nombor genap boleh dibahagi tepat dengan empat*. [false / *palsu*]

(e) ..... polygons have a 360° exterior angle.

..... *poligon mempunyai sudut peluaran 360°.* [false / *palsu*]

(f) ..... vehicles use petrol.

..... *kenderaan menggunakan minyak petrol.* [false / *palsu*]

[6 *marks*/*markah*]

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3. Write two implications based on the following statements:
Tuliskan dua implikasi berdasarkan pernyataan yang berikut:

(a) A polygon is a pentagon if and only if the polygon has 5 diagonals.
Sebuah poligon ialah pentagon jika dan hanya jika poligon itu mempunyai 5 pepenjuru.

Implication 1/*Implikasi 1*:

.....

Implication 2/*Implikasi 2*:

.....

(b) $a^2 + b^2 = c^2$ if and only if c is a hypotenuse.
$a^2 + b^2 = c^2$ *jika dan hanya jika c ialah hipotenus.*

Implication 1/*Implikasi 1*:

.....

Implication 2/*Implikasi 2*:

.....

[2 *marks*/*markah*]

---

4. Construct one implication using the words "if and only if" based on the following two implications:
Bina satu implikasi menggunakan perkataan "jika dan hanya jika" berdasarkan dua implikasi yang berikut:

(a) Implication 1: If $7 + x = 20$, then $x = 13$.
Implikasi 1: Jika $7 + x = 20$, *maka* $x = 13$.

(b) Implication 2: If $x = 13$, then $7 + x = 20$.
Implikasi 2: Jika $x = 13$, *maka* $7 + x = 20$.

Conclusion/*Kesimpulan*:

.....

(c) Implication 1: If $PQ^2 + QR^2 = PR^2$, then PQR is a right-angled triangle.
Implikasi 1: Jika $PQ^2 + QR^2 = PR^2$, *maka PQR ialah segi tiga bersudut tegak.*
Implication 2: If PQR is a right-angled triangle, then $PQ^2 + QR^2 = PR^2$.
Implikasi 2: Jika PQR ialah segi tiga bersudut tegak, maka $PQ^2 + QR^2 = PR^2$.

Conclusion/*Kesimpulan*:

.....

(d) Implication 1: If $18 > 10$, then $18 > 13$.
Implikasi 1: Jika $18 > 10$, maka $18 > 13$.
Implication 2: If $18 > 13$, then $18 > 10$.
Implikasi 2: Jika $18 > 13$, maka $18 > 10$.

Conclusion/*Kesimpulan*:

.....

[2 *marks*/*markah*]

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5. Write the converse for the following implication : If "$m > 14$ then, $m > 9$", and then, determine whether the converse is true or false.
Tulis akas bagi implikasi yang berikut : Jika "$m > 14$ maka, $m > 9$", dan seterusnya, tentukan sama ada akas itu benar atau palsu.

.....

[2 *marks*/*markah*]

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6. Write the converse for the following implication: If "$p + 3 = 18$, then $p = 15$", and then, determine whether the converse is true or false.
Tulis akas bagi implikasi yang berikut : Jika "$p + 3 = 18$, maka $p = 15$", dan seterusnya, tentukan sama ada akas itu benar atau palsu.

.....

[2 *marks*/*markah*]

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7. Complete the argument for each of the following:
Lengkapkan hujahan bagi setiap yang berikut :

(a) Premise 1: All even numbers can be divided exactly by 2.
Premis 1: Semua nombor genap boleh dibahagi tepat dengan 2.
Premise 2: 28 is an even number.
Premis 2: 28 ialah nombor genap.

Conclusion/*Kesimpulan*: .....

[1 *mark*/*markah*]

(b) Premise 1: All rhombuses have four sides of equal length.
Premis 1: Semua rombus mempunyai empat sisi yang sama panjang.
Premise 2:
Premis 2: .....

Conclusion: *PQRS* is a rhombus.
Kesimpulan: PQRS ialah sebuah rombus.

[1 *mark*/*markah*]

(c) Premise 1: The passing marks for Mathematics is 40.
Premis 1: Markah untuk lulus Matematik ialah 40
Premise 2: Daniel gets 40 marks.
Premis 2: Daniel mendapat 40 markah.

Conclusion/*Kesimpulan*: .....

[1 *mark*/*markah*]

(d) Premise 1: If $p = 18$, then $p + 8 = 26$.
Premis 1: Jika p = 18, maka p + 8 = 26.
Premise 2:
Premis 2: .....

Conclusion: $p = 18$ if and only if $p + 8 = 26$.
Kesimpulan: p = 18 jika dan hanya jika p + 8 = 26.

[1 *mark*/*markah*]

(e) Premise 1: If $(x + 3)(x - 3) = 0$, then the general form of a quadratic equation is $x^2 - 9 = 0$.
Premis 1: Jika (x+ 3)(x – 3) = 0, maka bentuk am persamaan kuadratik ialah $x^2 - 9 = 0$.
Premise 2: If the general form of a quadratic equation is $x^2 - 9 = 0$, then $(x + 3)(x - 3) = 0$.
Premis 2: Jika bentuk am persamaan kuadratik ialah $x^2 - 9 = 0$, maka (x+ 3)(x – 3) = 0.

Conclusion/*Kesimpulan*: .....

[1 *mark*/*markah*]

(f) Premise 1: If $p > 9$, then $p + 9 > 18$.
Premis 1: Jika $p > 9$, maka $p + 9 > 18$.
Premise 2: $p + 9 < 18$
Premis 2: $p + 9 < 18$

Conclusion/*Kesimpulan*: .....

[1 *mark*/*markah*]

(g) Premise 1: If $\cos x° = 0.5$, then $x° = 60°$.
Premis 1: Jika kos x° = 0.5, maka x° = 60°.
Premise 2: $x° \neq 60°$
Premis 2: $x° \neq 60°$

Conclusion/*Kesimpulan*: .....

[1 *mark*/*markah*]

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8. Make an inductive conclusion for each of the following number patterns:
Buat kesimpulan secara induktif bagi setiap pola nombor yang berikut:

[8 *marks*/*markah*]

(a) $11 = 4(1) + 7$
$15 = 4(2) + 7$
$19 = 4(3) + 7$
…. = …..

Conclusion/*Kesimpulan*: .....

[2 *marks*/*markah*]

(b) $11 = 10 + 1^2$
$14 = 10 + 2^2$
$19 = 10 + 3^2$
…. = …..

Conclusion/*Kesimpulan*: .....

[2 *marks*/*markah*]

(c) $6 = 5^1 + 1$
$27 = 5^2 + 2$
$128 = 5^3 + 3$
…. = …..

Conclusion/*Kesimpulan*: .....

[2 *marks*/*markah*]

(d) 18 = 5 + 13
19 = 6 + 13
20 = 7 + 13
…. = …..

Conclusion/*Kesimpulan*: ……....

[2 *marks*/*markah*]

(e) 21 = 20 + 1
24 = 20 + 4
29 = 20 + 9
…. = …..

Conclusion/*Kesimpulan*: ……....

[2 *marks*/*markah*]

(f) 2 = 1 + 1
10 = 2 + 8
30 = 3 + 27
…. = …..

Conclusion/*Kesimpulan*: ……....

[2 *marks*/*markah*]

---

9. Make a deductive conclusion for each of the following:
Buat kesimpulan secara deduktif bagi setiap yang berikut:

(a) A cylinder with radius j and height t has a volume of $\pi j^2 t$. Make a conclusion for a cylinder that has a radius of 7 cm and a height of 12 cm.
Sebuah silinder dengan jejari j dan tinggi t mempunyai isi padu $\pi j^2 t$. Buat satu kesimpulan bagi sebuah silinder yang mempunyai jejari 7 cm dan tingginya 12 cm.

Conclusion/*Kesimpulan*: ……

[2 *marks*/*markah*]

(b) A polygon with n sides has a total interior angle of $\frac{(n-2)\times 180°}{n}$. Make a conclusion of a polygon that has 10 sides.
Suatu poligon dengan n sisi mempunyai jumlah sudut pedalaman $\frac{(n-2)\times 180°}{n}$. Buat satu kesimpulan bagi suatu poligon yang mempunyai 10 sisi.

Conclusion/*Kesimpulan*: ……

[2 *marks*/*markah*]

(c) Given that the volume of a hemisphere is $\frac{2}{3}\pi j^3$ where j is the radius. Make a deductive conclusion for the volume of a hemisphere with a radius of 9 cm.
Diberi isi padu sebuah hemisfera ialah $\frac{2}{3}\pi j^3$ di mana j ialah jejari. Buat satu kesimpulan secara deduksi untuk isi padu sebuah hemisfera dengan jejari 9 cm.

Conclusion/*Kesimpulan*: ……

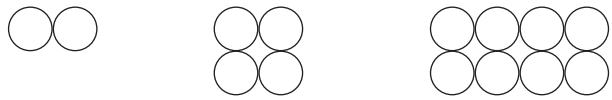
[2 *marks*/*markah*]

(d) Given that the sum of the interior angles of a polygon with n sides is $(n - 2) \times 180°$. Make a deductive conclusion on the sum of the interior angles of an octagon.
Diberi hasil tambah sudut pedalaman satu poligon dengan n sisi ialah $(n - 2) \times 180°$. Buat satu kesimpulan secara deduksi tentang hasil tambah sudut pedalaman oktagon.

Conclusion/*Kesimpulan*: ……

[2 *marks*/*markah*]

(e) The diagram below shows the arrangement of a few types of balls.
Rajah di bawah menunjukkan susunan beberapa jenis bebola.



Make a conclusion for the arrangement of the 7th ball.
Bina kesimpulan untuk susunan bebola yang ke-7.

Conclusion/*Kesimpulan*: .....

[2 *marks*/*markah*]

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10. (a) Determine whether each of the following are statements or not statements.
Tentukan sama ada setiap yang berikut ialah pernyataan atau bukan pernyataan.

(i) $7y + 4 = 13$ .....

(ii) Traffic lights have three colours.
Lampu isyarat mempunyai tiga warna. .....

(b) Complete the following arguments:
Lengkapkan hujahan yang berikut:

Premise 1: All pentagon has 5 sides.
Premis 1: Semua pentagon mempunyai 5 sisi.
Premise 2:
Premis 2: .....

Conclusion: *PQRST* is a pentagon.
Kesimpulan: PQRST ialah sebuah pentagon.

(c) Make a deductive conclusion for the number pattern according the following sequence:
Buat satu kesimpulan secara deduksi bagi pola nombor mengikut urutan yang berikut:

$15 = 5(1) + 10$
$30 = 5(4) + 10$
$55 = 5(9) + 10$
… = …

Answer/*Jawapan*: .....

[5 *marks*/*markah*]

---

11. (a) Write a compound statement by combining the two statements given below by using the words "and" or "or" to make a statement true.
Tulis satu pernyataan majmuk dengan menggabungkan dua pernyataan yang diberi di bawah dengan menggunakan perkataan "dan" atau "atau" untuk menjadikan suatu pernyataan benar.

81 is a perfect square number. *81 ialah nombor kuasa dua sempurna.* 81 is a prime number. *81 ialah nombor perdana.*

.....

(b) Write a conclusion to complete the following argument:
Tulis kesimpulan untuk melengkapkan hujah berikut:
Premise 1: If $x^2 + 5 = 21$, then $x = 4$.
Premis 1: Jika $x^2 + 5 = 21$, maka $x = 4$.
Premise 2: $x \neq 4$
Premis 2: $x \neq 4$

Conclusion/*Kesimpulan*: .....

(c) Make a conclusion by induction for the following number patterns:
Buat satu kesimpulan secara aruhan bagi pola nombor yang berikut:

$$-9 = 8^1 - 17$$
$$47 = 8^2 - 17$$
$$495 = 8^3 - 17$$
$$4079 = 8^4 - 17$$

Answer/*Jawapan*: .....

[4 *marks*/*markah*]

---

12. (a) Determine whether each of the following statements are true or false.
Tentukan sama ada setiap pernyataan yang berikut benar atau palsu.

(i) $3(x + 5) + 4 = 28$ if and only if $y = 3$.
$3(x + 5) + 4 = 28$ jika dan hanya jika $y = 3$.

.....

(ii) A hexagon has 5 sides or 49 is a prime number.
Heksagon mempunyai 5 sisi atau 49 ialah nombor perdana.

.....

(b) Complete the following argument:
Lengkapkan hujahan yang berikut:
Premise 1: If $x = 2$, then $3x^2 + 5 = 19$.
Premis 1: Jika $x = 2$, maka $3x^2 + 5 = 19$.
Premise 2: $x \neq 2$
Premis 2: $x \neq 2$

Conclusion/*Kesimpulan*: .....

(c) Make a conclusion by induction for the number pattern in the following order:
Buat satu kesimpulan secara deduksi bagi pola nombor mengikut urutan yang berikut:

$$-20 = 1 - 3(7)$$
$$-20 = 4 - 3(8)$$
$$-18 = 9 - 3(9)$$
$$\ldots = \ldots$$

Answer/*Jawapan*: .....

[5 *marks*/*markah*]

13. (a) For each of the following statements, determine whether the statement is true or false.
Untuk setiap pernyataan berikut, tentukan sama ada pernyataan ini benar atau palsu.

(i) Cuboid has 8 corners.
Kuboid mempunyai 8 bucu. = ...

(ii) $6^2 = 12$ and / *dan* $7 + 9 = 16$ = ...

(b) List two implications based on the following statement:
Tulis dua implikasi berdasarkan pernyataan berikut:

"$(-T)^3 = -125$ if and only if $T = -5$" *"$(-T)^3 = -125$ jika dan hanya jika $T = -5$"*

Implication 1/*Implikasi 1*:

.....

Implication 2/*Implikasi 2*:

.....

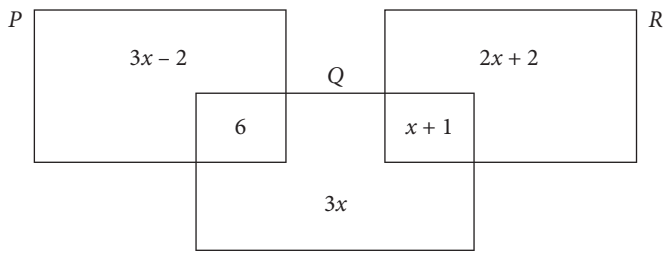
(c) Write a conclusion to complete the following argument:
Tulis kesimpulan untuk melengkapkan hujah berikut:
Premise 1: All octagon has 8 sides.
Premis 1: Semua oktagon mempunyai 8 sisi.
Premise 2: *PQRSTUVW* is an octagon.
Premis 2: PQRSTUVW ialah sebuah oktagon.

Conclusion/*Kesimpulan*: .....

[5 *marks*/*markah*]

FORM 4

1. The Venn diagram shows three sets, set P, set Q and set R.
Gambar rajah Venn menunjukkan tiga set, set P, set Q dan set R.



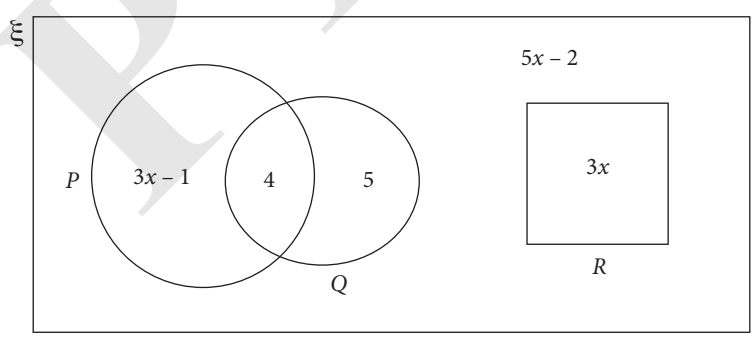
Given $n(Q) = 19$, find $n(R)'$.
Diberi n(Q) = 19, cari n(R)'.

[3 *marks*/*markah*]

Answer/*Jawapan*:

---

2. The diagram below shows set ξ, set P, set Q and set R.
Rajah di bawah menunjukkan set ξ, set P, set Q dan set R.

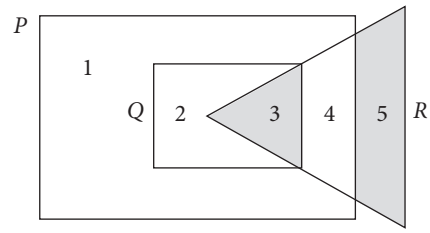


Given $n(P \cup R) = n(Q \cup R)'$. Find the value of x.
Diberi bahawa n(P ∪ R) = n(Q ∪ R)'. Cari nilai x.

[3 *marks*/*markah*]

Answer/*Jawapan*:

3. (a) Based on the diagram, determine whether $Q \cup R \cap P' = 4$ is true or false.
Berdasarkan rajah, tentukan sama ada $Q \cup R \cap P' = 4$ benar atau palsu.



.....

(b) Write a relation that represents the shaded region.
Tuliskan satu hubungan yang mewakili rantau berlorek.

.....

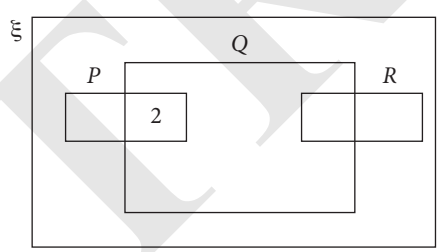
[3 *marks*/*markah*]

---

4. The diagram in answer space (a) is an incomplete Venn diagram with set ξ, set P, set Q and set R.
Rajah di ruang jawapan (a) ialah gambar rajah Venn yang tidak lengkap dengan set ξ, set P, set Q dan set R.

Set P = {Pétanque club members}
Set P = {Ahli kelab petanque}
Set Q = {Tennis club members}
Set Q = {Ahli kelab tenis}
Set R = {Badminton club member}
Set R = {Ahli kelab badminton}
Given $n(\xi) = 180$, $n(P) = 30$, $n(Q) = 112$, $n(R) = 35$ and $n(Q \cap R) = 6$.
Diberi $n(\xi) = 180$, $n(P) = 30$, $n(Q) = 112$, $n(R) = 35$ dan $n(Q \cap R) = 6$.

(a) Complete the Venn diagram.
Lengkapkan gambar rajah Venn.



[2 *marks*/*markah*]

(b) Next, find the difference between the number of students who did not participate in any game and the number of students who played Pétanque only.
Seterusnya, cari beza bilangan murid yang tidak menyertai mana-mana permainan dengan bilangan murid yang bermain Petanque sahaja.

[2 *marks*/*markah*]

Answer/*Jawapan*:

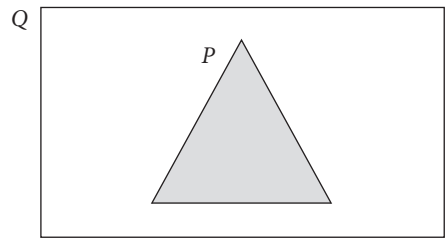
(c) Find $n[(P \cap Q') \cup (R \cap Q)]$.
Cari $n[(P \cap Q') \cup (R \cap Q)]$.

[3 *marks*/*markah*]

Answer/*Jawapan*:

FORM 4

5. (a) The diagram below is a Venn diagram showing set P and set Q with the condition set $\xi = P \cup Q$.
Rajah di bawah ialah gambar rajah Venn yang menunjukkan set P dan set Q dengan keadaan set $\xi = P \cup Q$.



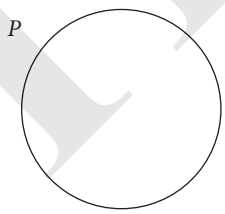
State the relation between set P and set Q.
Nyatakan hubungan antara set P dengan set Q itu.

[1 *mark*/*markah*]

Answer/*Jawapan*:

(b) (i) Set P is a set of odd numbers and set Q is a set of multiples of 2.
Complete the Venn diagram in the answer space to show the relation between set P and set Q.
Set P ialah set nombor ganjil dan set Q ialah set nombor gandaan 2.
Lengkapkan gambar rajah Venn di ruang jawapan untuk menunjukkan hubungan antara set P dengan set Q.

Answer/*Jawapan*:



(ii) Given three sets, set P, set Q and set R with universal set $\xi = P \cup Q \cup R$.
$P \cap Q = \varnothing$ and $P \cup Q \subset R$.
Draw a Venn diagram in the answer space provided to show the relation between set P, set Q and set R.
Diberi tiga set P, set Q dan set R dengan keadaan set semesta $\xi = P \cup Q \cup R$.
$P \cap Q = \varnothing$ *dan* $P \cup Q \subset R$.
Lukis gambar rajah Venn di ruang jawapan yang disediakan untuk menunjukkan hubungan antara set P, set Q dan set R.

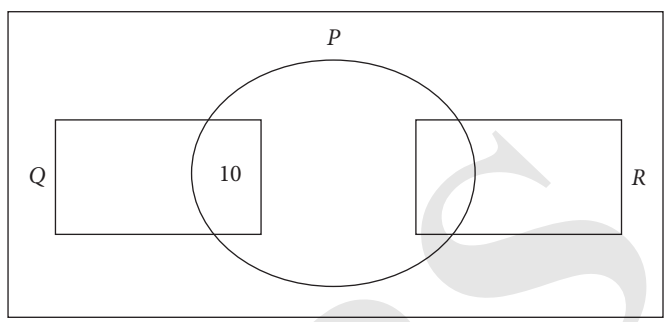
[3 *marks*/*markah*]

Answer/*Jawapan*:

6. The diagram in the answer space is a Venn diagram with the universal set, ξ, set P, set Q and set R.
Rajah di ruang jawapan ialah gambar rajah Venn dengan set semesta, ξ, set P, set Q dan set R.
set P = {Bahasa Melayu club members}
set P = {ahli kelab Bahasa Melayu}
set Q = {English club members}
set Q = {ahli kelab Bahasa Inggeris}
set R = {Mathematics club members}
set R = {ahli kelab Matematik}

Given that $n(\xi) = 245$, $n(P) = 126$, $n(Q) = 29$, $n(R) = 101$ and $n(P \cap R) = 30$.
Diberi bahawa $n(\xi) = 245$, $n(P) = 126$, $n(Q) = 29$, $n(R) = 101$ dan $n(P \cap R) = 30$.

(a) Complete the Venn diagram.
Lengkapkan gambar rajah Venn itu.



[2 *marks*/*markah*]

(b) Next, find the difference between the number of students who are not a member in the three clubs and the number of Mathematics club members only.
Seterusnya, cari beza antara bilangan murid yang bukan ahli bagi ketiga-tiga kelab itu dengan bilangan ahli kelab Matematik sahaja.

[1 *mark*/*markah*]

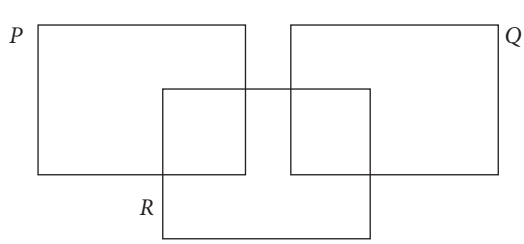
Answer/*Jawapan*:

---

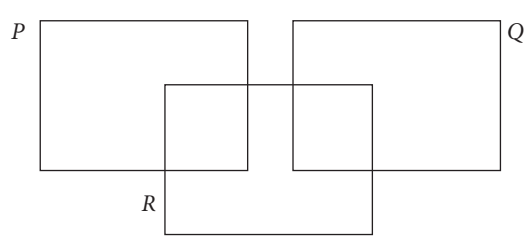
7. Shade each of the following sets completely.
Lorekkan setiap set yang berikut selengkapnya.

[3 *marks* for each question/*Setiap soalan 3 markah*]

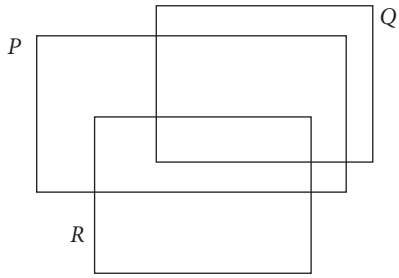
(a) (i) $P \cap R$



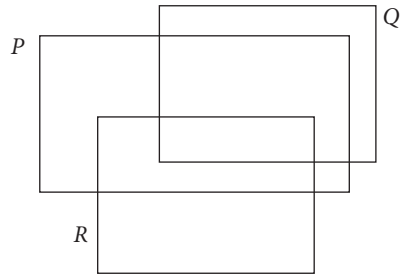
(ii) $P \cup Q \cap R$



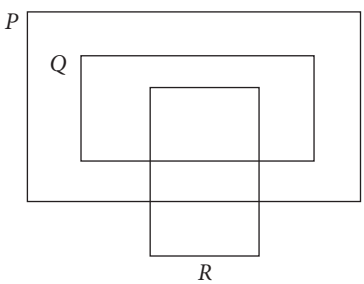
(b) (i) P'



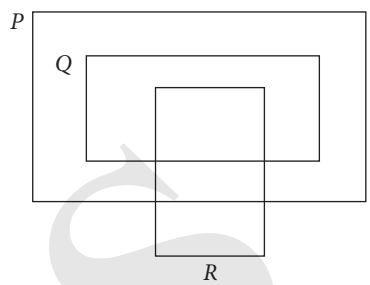
(ii) $P \cap Q \cup R$



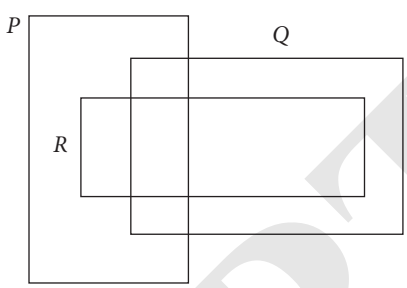
(c) (i) $Q \cap R$



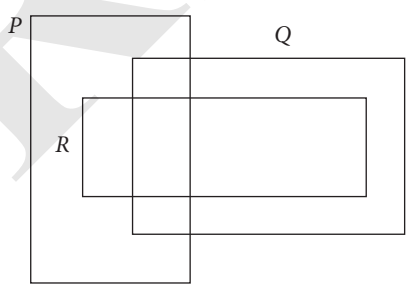
(ii) $(Q \cap R') \cup (P \cap Q)'$



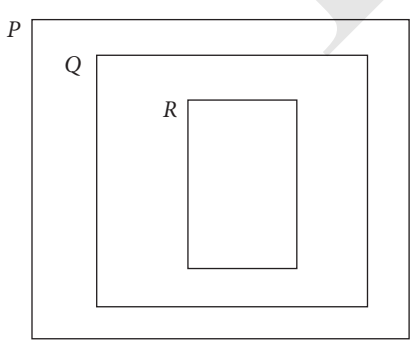
(d) (i) $Q \cap R'$



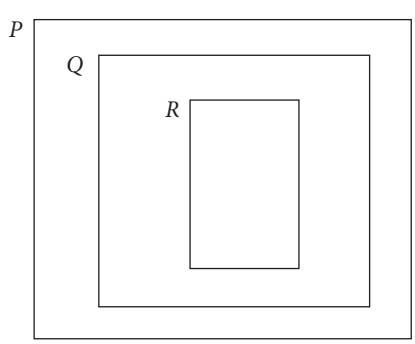
(ii) $Q \cap (P \cup R)$



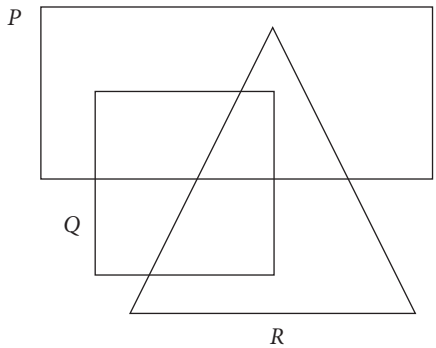
(e) (i) $P \cap Q'$



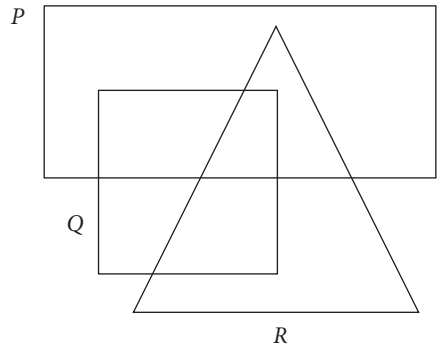
(ii) $(Q \cap R') \cup (P \cap Q')$



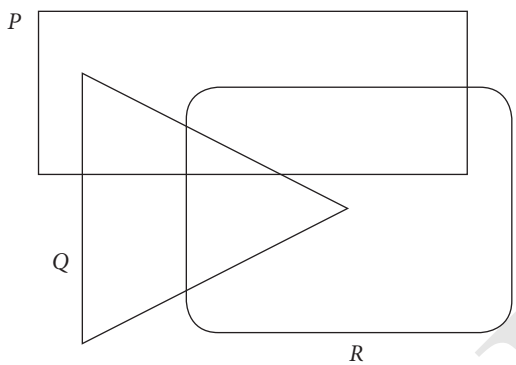
(f) (i) $P \cap R$



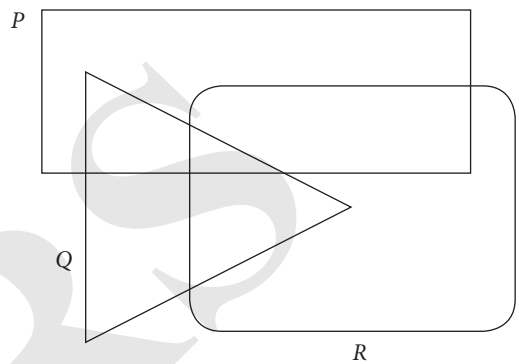
(ii) $(Q \cap R)' \cap P$



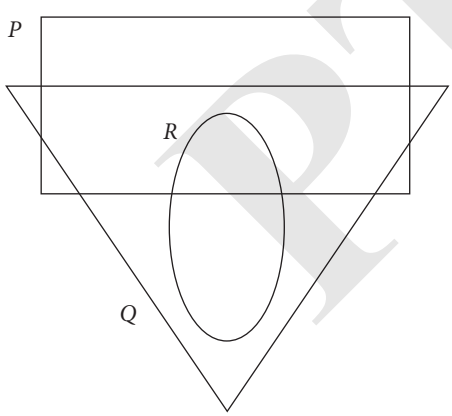
(g) (i) Q'



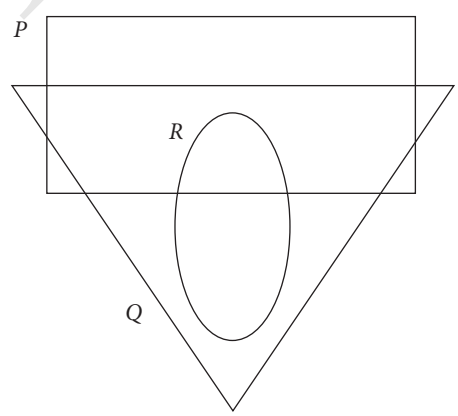
(ii) $(Q \cup R) \cap P'$



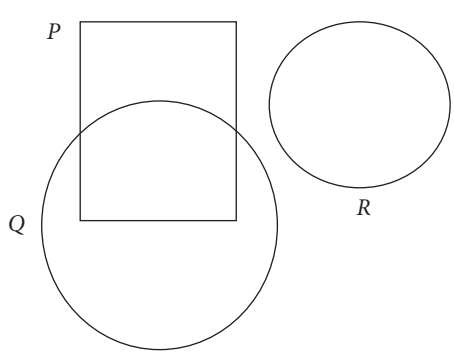
(h) (i) $Q \cap R$



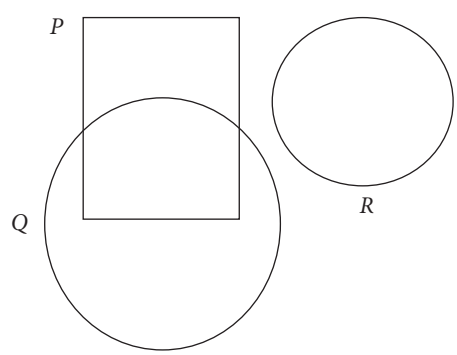
(ii) $P \cup R' \cap Q$



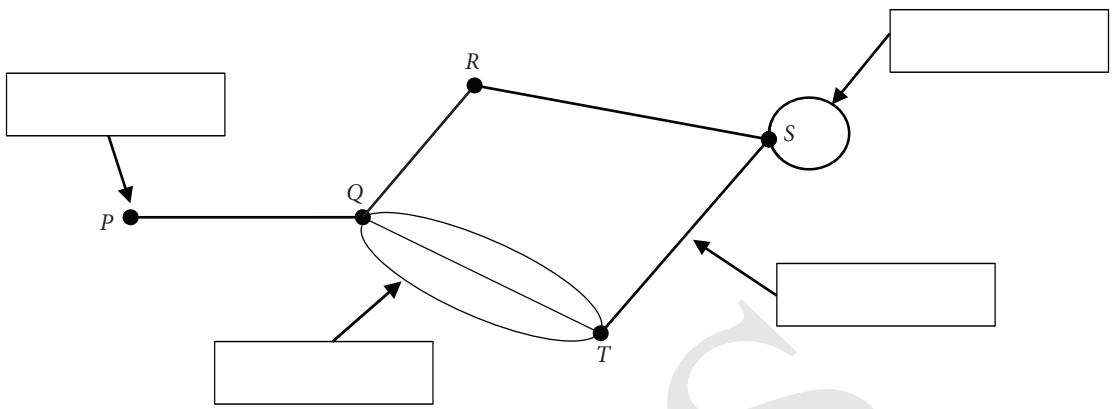
(i) (i) $Q' \cap P$



(ii) $P \cap Q \cup R$



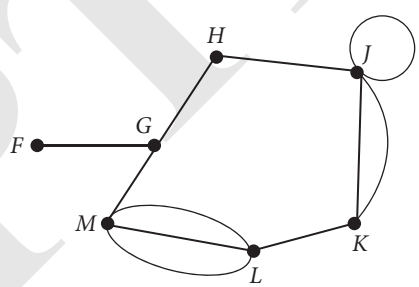
1. Label each of the following accurately.
Labelkan setiap yang berikut dengan tepat.



[4 *marks*/*markah*]

---

2. The diagram below shows a network of graphs.
Rajah di bawah menunjukkan satu rangkaian graf .



Complete the table accurately.
Lengkapkan jadual tersebut dengan tepat.

(a) List all vertices, *V* *Senaraikan semua bucu, V*	
(b) List all vertices, *E* *Senaraikan semua bucu, E*	
(c) State/*Nyatakan,* $\Sigma d(v)$	

[3 *marks*/*markah*]

3. Draw a simple graph and label the vertices, according to the information provided.
Lukis satu graf mudah dan labelkan bucu, mengikut maklumat yang diberikan.

$V = \{P, Q, R, S, T, U, W\}$
$E = \{(P, Q), (Q, S), (Q, R), (R, T), (S, T), (S, U), (T, U), (U, W)\}$

[3 *marks*/*markah*]

Answer/*Jawapan*:

---

4. Draw a graph with multiple edges and loops and label the vertices, according to the information provided.
Lukis satu graf berbilang tepi dan mempunyai gelung dan labelkan bucu, mengikut maklumat yang diberikan.

$V = \{P, Q, R, S, T, U\}$
$E = \{(P, Q), (Q, R), (Q, S), (Q, T), (R, S), (R, S), (R, S), (S, T), (S, T), (S, U), (S, S)\}$

[3 *marks*/*markah*]

Answer/*Jawapan*:

---

5. Draw a simple graph for the following sum of degrees → 2, 3, 2, 3, 4
Lukis graf mudah bagi bilangan darjah yang berikut → 2, 3, 2, 3, 4

[2 *marks*/*markah*]

Answer/*Jawapan*:

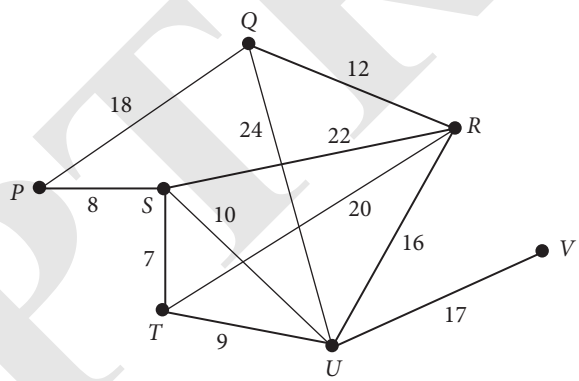
6. Draw a graph with loops and multiple edges that have degrees → 2, 3, 3, 4, 3, 1
Lukis graf yang mempunyai gelung dan berbilang tepi yang mempunyai darjah → 2, 3, 3, 4, 3, 1

[2 *marks*/*markah*]

Answer/*Jawapan*:

---

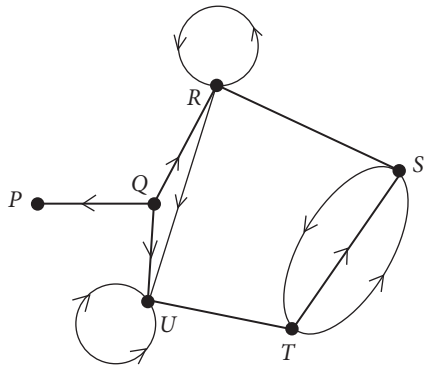
7. Draw a tree from the following graph with a minimum total weight.
Lukis satu pokok daripada graf yang berikut dengan jumlah pemberat yang paling minimum.



[3 *marks*/*markah*]

Answer/*Jawapan*:

8. The diagram below shows a network of graph with multiple edges and loops connecting six vertices.
Rajah di bawah menunjukkan satu rangkaian graf berbilang tepi dan gelung yang menghubungkan enam bucu.



Based on the network graph, complete the number of degrees for each of the following:
Berdasarkan graf rangkaian tersebut, lengkapkan bilangan darjah bagi setiap yang berikut:

(a) $d_{in}(P)$ = ... $d_{out}(P)$ = ...

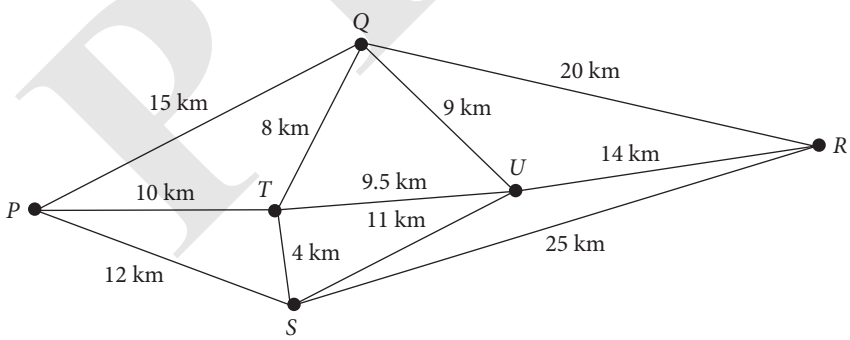
(b) $d_{in}(Q)$ = ... $d_{out}(Q)$ = ...

(c) $d_{in}(S)$ = ... $d_{out}(S)$ = ...

(d) $d_{in}(U)$ = ... $d_{out}(U)$ = ...

[4 *marks*/*markah*]

9. The diagram below shows the position of six villages in a community. An *NGO* plans to distribute food donations to all these villages during Covid 19 after obtaining approval from the police.
Rajah di bawah menunjukkan kedudukan enam kampung dalam satu komuniti. Sebuah NGO merancang untuk mengedar bekalan sumbangan makanan ke semua kampung tersebut semasa Covid 19 setelah mendapat kelulusan daripada pihak polis.



(a) Draw a directed graph showing the shortest route that the *NGO* will take starting from village *P* and ends at village *U* without going through the same route repeatedly.
Lukis satu graf terarah yang menunjukkan laluan terpendek yang akan dilalui oleh NGO tersebut bermula dari kampung P dan berakhir di kampung U tanpa melalui laluan yang sama berulang kali.

[2 *marks*/*markah*]

Answer/*Jawapan*:

FORM 4

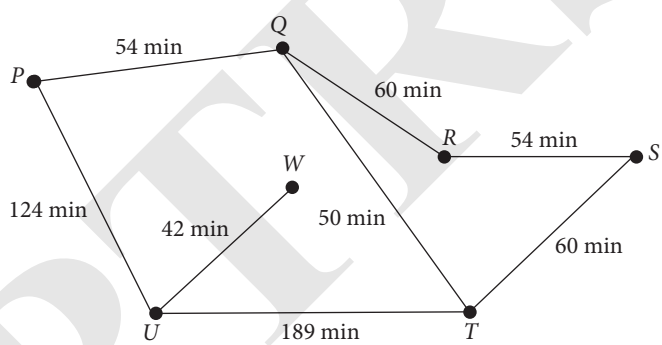
(b) Given that each village will be allocated 30 minutes for the purpose of handing over the aid and the travel speed between the villages is 60 kmh^{-1}. Calculate the time, in hours, required to complete the donation program.
Diberi setiap kampung akan diperuntukkan 30 minit untuk tujuan penyerahan bantuan itu dan laju perjalanan antara kampung ialah 60 kmj^{-1}. Hitung, masa, dalam jam, yang diperlukan bagi menyelesaikan program sumbangan itu.

[3 *marks*/*markah*]

Answer/*Jawapan*:

---

10. The weighted graph below shows the duration required to reach seven destinations, *P*, *Q*, *R*, *S*, *T*, *U* and *W*.
Graf pemberat di bawah menunjukkan tempoh masa yang diperlukan untuk sampai ke tujuh destinasi, P, Q, R, S, T, U dan W.



(a) Faiza moves from *U* towards *R* using the fastest route. Name the route and calculate the speed, in kmh^{-1}, Faiza travels, given the total distance travelled is 249 km.
Faiza bergerak dari U menuju ke R melalui laluan terpantas. Namakan laluan tersebut dan hitung laju, dalam kmj^{-1}, perjalanan Faiza, diberi jumlah jarak yang dilalui ialah 249 km.

[3 *marks*/*markah*]

Answer/*Jawapan*:

(b) Haniza who is at *W* wants to meet her friend who is at *S*. She will take her sister who is at *Q* first, before continuing the journey to her friend's house. She is at her friend's house for 1.65 hours before going back to her house. Given the average speed of the entire trip is 65 kmh^{-1}.
Haniza berada di W ingin berjumpa rakannya yang berada di S. Dia akan mengambil adiknya yang berada di Q terlebih dahulu, sebelum meneruskan perjalanan ke rumah rakannya. Dia berada di rumah rakannya selama 1.65 jam sebelum bergerak pulang ke rumahnya. Diberi purata laju keseluruhan perjalanannya ialah 65 kmj^{-1}.

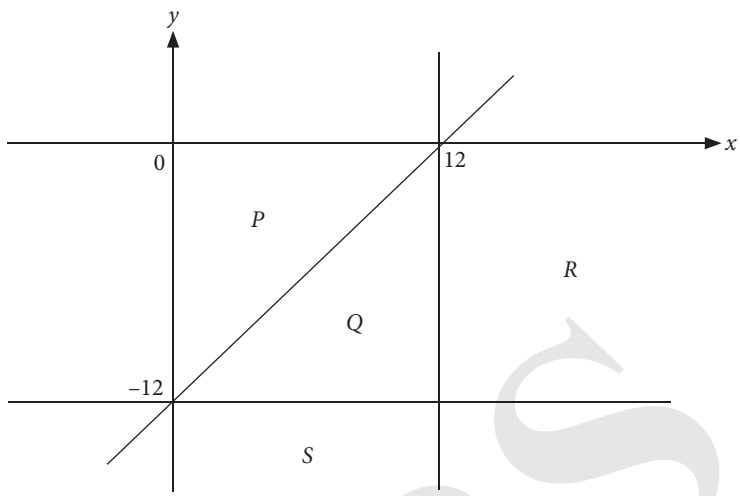
(i) If Haniza arrives at her house at 9.45 p.m., state the time she begins her journey.
Jika Haniza tiba di rumahnya pada pukul 9.45 p.m., nyatakam masa ketika dia memulakan perjalanannya.
[3 *marks*/*markah*]

Answer/*Jawapan*:

(ii) Calculate the distance, in km, that Haniza travelled to arrive at her friend's house.
Hitung jarak, dalam km, yang dilalui oleh Haniza untuk tiba di rumah rakannya.
[3 *marks*/*markah*]

Answer/*Jawapan*:

1. Based on the graph below, mark (✓) the regions represented by each of the equation below.
Berdasarkan rajah di bawah, tandakan (✓) pada rantau yang diwakili oleh setiap persamaan yang berikut.

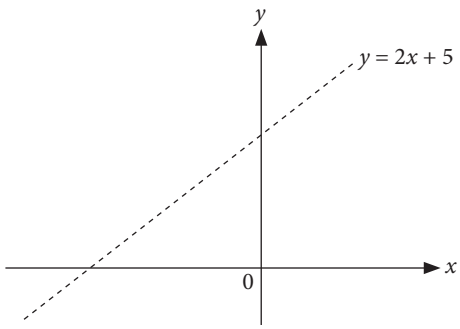


	P	*Q*	*R*	*S*
Use the symbol: $<$, $\leqslant$, $>$, $\geqslant$ or = *Gunakan simbol:* $<$, $\leqslant$, $>$, $\geqslant$ *or* =				
Example: $x < 12$ *Contoh:*	✓	✓	✓	✓
$y \leqslant -12$				
$y > x - 12$				
$y \leqslant x - 12$				
$x > 12$				

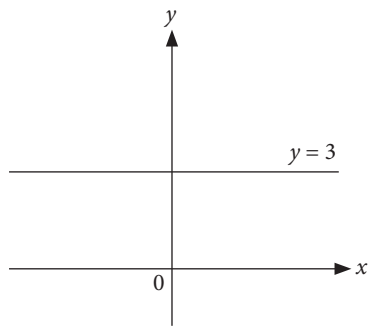
[4 *marks*/*markah*]

2. For each diagram below, construct and shade the region that satisfies the stated inequality.
Bagi setiap rajah di bawah, bina dan lorek rantau yang memuaskan ketaksamaan yang dinyatakan.

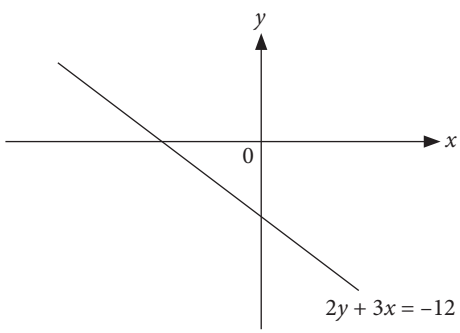
(a) $y < 2x + 5$



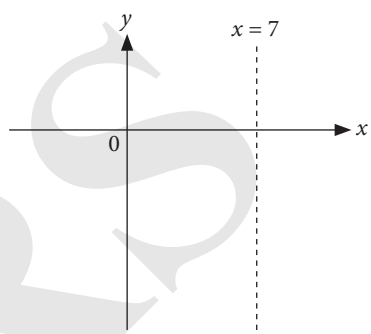
(b) $y \geqslant 3$



(c) $2y + 3x \geqslant -12$

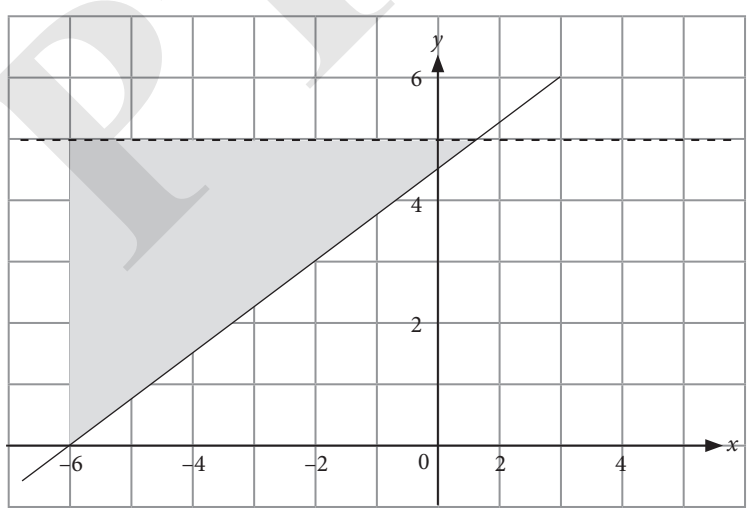


(d) $x > 7$



[4 *marks*/*markah*]

3. Based on the diagram below, write three inequalities that satisfy the shaded region.
Berdasarkan rajah di bawah, tuliskan tiga ketaksamaan yang memuaskan rantau berlorek.



[3 *marks*/*markah*]

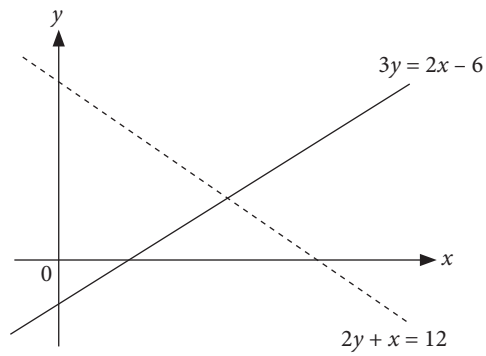
Answer/*Jawapan*:

(a) .....

(b) .....

(c) .....

4. In the diagram in the answer space, shade the region that satisfies the three inequalities $3y \leqslant 2x - 6$, $2y + x > 12$ and $x < 12$.
Pada rajah di ruang jawapan, lorekkan rantau yang memuaskan ketiga-tiga ketaksamaan $3y \leqslant 2x - 6$, $2y + x > 12$ dan $x < 12$.



[3 *marks*/*markah*]

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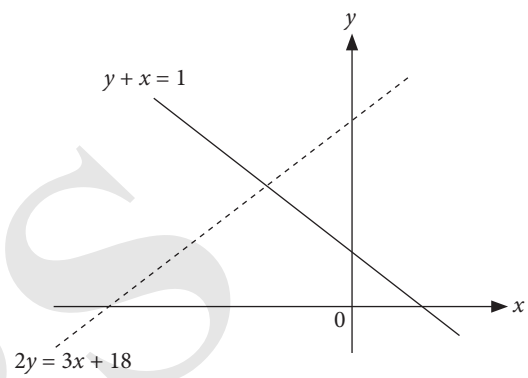
5. In the diagram in the answer space, shade the region that satisfies the three inequalities $y + x \geqslant 1$, $2y > 3x + 18$ and $y < 9$.
Pada rajah di ruang jawapan, lorekkan rantau yang memuaskan ketiga-tiga ketaksamaan $y + x \geqslant 1$, $2y > 3x + 18$ dan $y < 9$.



[3 *marks*/*markah*]

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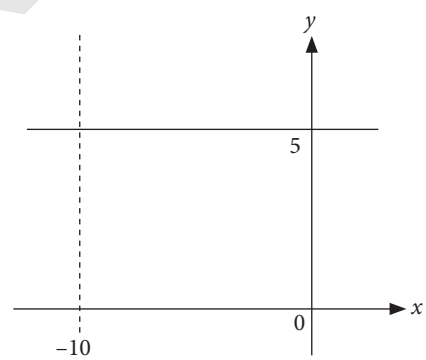
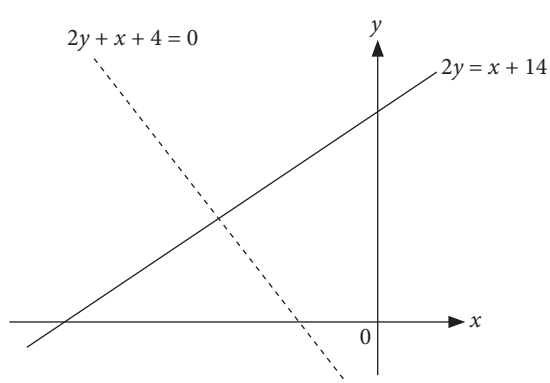
6. In the diagram in the answer space, shade the region that satisfies the three inequalities $y \leqslant 5$, $x > -10$ and $2y \geqslant x + 10$.
Pada rajah di ruang jawapan, lorekkan rantau yang memuaskan ketiga-tiga ketaksamaan $y \leqslant 5$, $x > -10$ dan $2y \geqslant x + 10$.



[3 *marks*/*markah*]

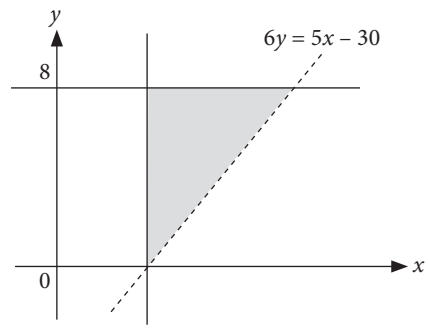
---

7. In the diagram in the answer space, shade the region that satisfies the three inequalities $2y \geqslant x + 14$, $2y + x + 4 < 0$ and $x \geqslant -14$.
Pada rajah di ruang jawapan, lorekkan rantau yang memuaskan ketiga-tiga ketaksamaan $2y \geqslant x + 14$, $2y + x + 4 < 0$ dan $x \geqslant -14$.



[3 *marks*/*markah*]

8. Write three inequalities that satisfy the shaded region.
Tuliskan tiga ketaksamaan yang memuaskan rantau berlorek.



[3 *marks*/*markah*]

Answer/*Jawapan*:

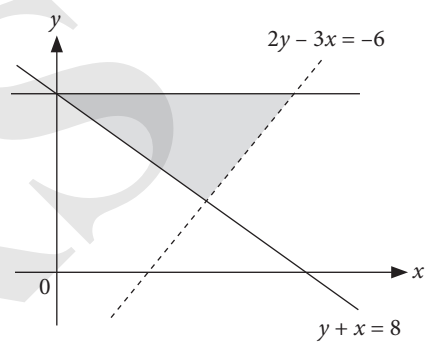
(a) .....

(b) .....

(c) .....

---

9. Write three inequalities that satisfy the shaded region.
Tuliskan tiga ketaksamaan yang memuaskan rantau berlorek.



[3 *marks*/*markah*]

Answer/*Jawapan*:

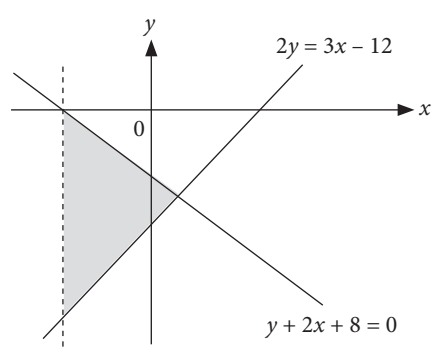
(a) .....

(b) .....

(c) .....

---

10. Write three inequalities that satisfy the shaded region.
Tuliskan tiga ketaksamaan yang memuaskan rantau berlorek.



[3 *marks*/*markah*]

Answer/*Jawapan*:

(a) .....

(b) .....

(c) .....

11. Aminah buys two types of fruit, namely watermelon and guava from a wholesaler to be sold in her store. The price of watermelon is RM 5 per kilogram, while the price of guava is RM 12 per kilogram. The conditions of purchase are as follows:
Aminah membeli dua jenis buah iaitu tembikai dan jambu daripada seorang pemborong untuk dijual di kedainya. Harga buah tembikai ialah RM5 sekilogram, manakala harga buah jambu ialah RM12 sekilogram. Syarat-syarat pembelian adalah seperti berikut:

(a) The total number of watermelons and guavas purchased is at least 60.
Jumlah buah tembikai dan buah jambu yang dibeli sekurang-kurangnya ialah 60 biji.
(b) The number of watermelons does not exceed twice the number of guavas.
Bilangan buah tembikai tidak melebihi dua kali bilangan buah jambu.
(c) The maximum amount of purchase is RM930.
Jumlah pembelian maksimum ialah RM930.

Based on the conditions given:
Berdasarkan syarat yang diberi:

Write three inequalities that satisfy the above conditions other than $x \geqslant 0$ and $y \geqslant 0$.
[Note: Represent the watermelon with x and the guava with y]
Tulis tiga ketaksamaan yang memuaskan syarat di atas selain daripada $x \geqslant 0$ dan $y \geqslant 0$.
[Nota : Wakilkan tembikai dengan x dan jambu dengan y]

[3 *marks*/*markah*]

Answer/*Jawapan*:

(a) .....

(b) .....

(c) .....

---

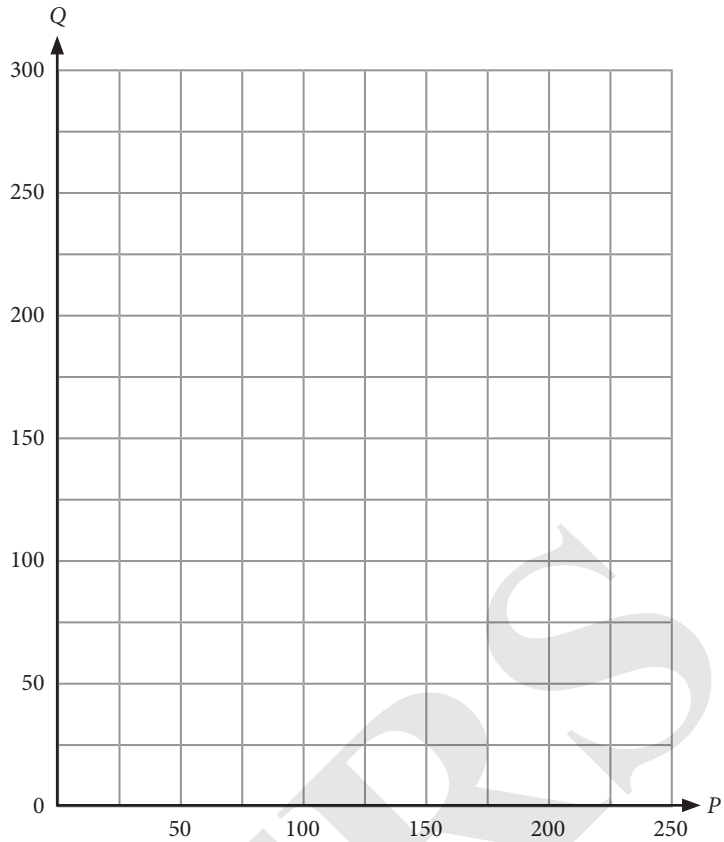
12. The school cooperative sells x type P pens and y type Q pens. The maximum number of the two pens is 200 and the number of type P pens is at least equal to the number of type Q pens.
Koperasi sekolah menjual x batang pen jenis P dan y batang jenis Q. Jumlah bilangan maksimum kedua-dua pen itu ialah 200 batang dan bilangan pen jenis P adalah sekurang-kurangnya sama dengan bilangan pen jenis Q.

(a) Complete below to show three linear inequalities other that $x \geqslant 0$ and $y \geqslant 0$, that represent the sale conditions of the pens.
Lengkapkan di bawah bagi menunjukkan tiga ketaksamaan linear selain daripada $x \geqslant 0$ dan $y \geqslant 0$ yang mewakili syarat-syarat penjualan pen itu.

$x + y$		200
x		y
y		x

[3 *marks*/*markah*]

(b) Draw and shade the region that satisfies the linear inequality in (a).
Lukis dan lorek rantau yang memuaskan ketaksamaan linear di (a).



[3 *marks*/*markah*]

(c) From the graph, determine
Daripada graf itu, tentukan
(i) the maximum number of type *Q* pens sold,
bilangan maksimum pen jenis Q yang dijual,
(ii) the minimum and maximum number of type *P* pens sold if 75 type *Q* pens have been sold.
bilangan minimum dan bilangan maksimum pen jenis P yang dijual jika 75 batang pen jenis Q telah terjual.

[3 *marks*/*markah*]

Answer/*Jawapan*:

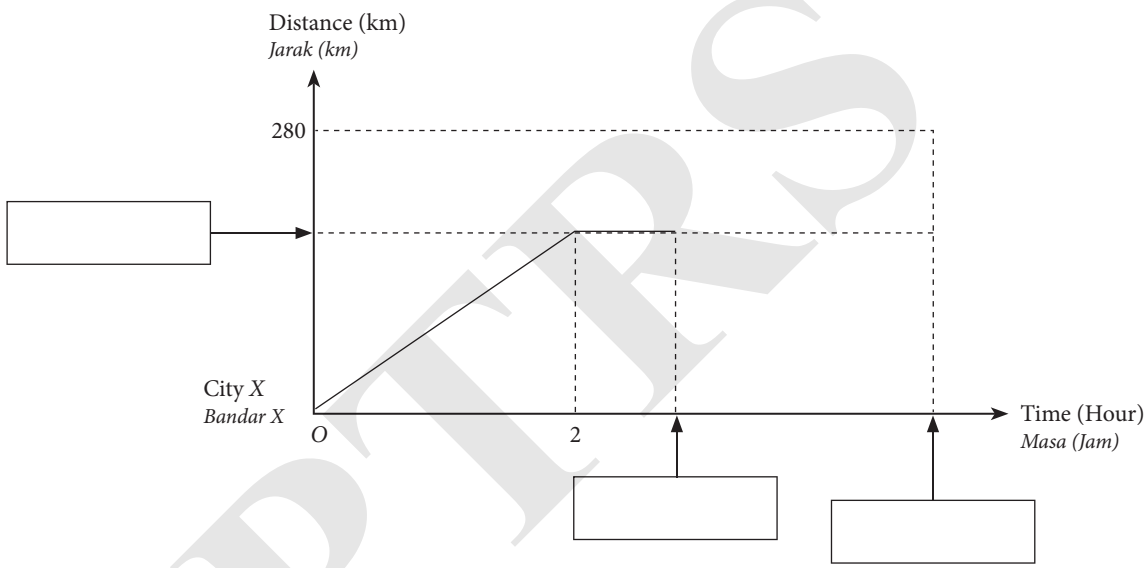
(c) (i) ..... (ii) .....

1. The diagram in the answer space shows the distance-time graph of a truck travelling for a distance of 280 km from city *X* to city *Y* to deliver petrol supply at a petrol station with the following conditions:
Rajah di ruang jawapan menunjukkan graf jarak-masa bagi perjalanan sebuah lori dari bandar X ke bandar Y sejauh 280 km untuk menghantar bekalan petrol di sebuah stesen minyak dengan keadaan berikut:

- Starts the journey from city *X* at 8.00 in the morning and arrives in city *Y* at 1 o' clock in the afternoon.
  Bergerak dari bandar X pada pukul 8.00 pagi dan tiba di bandar Y pada pukul 1 petang.
- Take a break at a rest area for breakfast and rest for 45 minutes after driving for 120 km.
  Berhenti rehat di sebuah hentian untuk bersarapan dan rehat selama 45 minit selepas memandu sejauh 120 km.

(a) (i) Complete the empty space with the correct answer.
Lengkapkan ruang kosong dengan jawapan yang betul.
(ii) Complete the distance-time graph to represent the truck's journey.
Lengkapkan graf jarak-masa untuk mewakili perjalanan lori itu.

[3 *marks*/*markah*]



(b) Calculate the average speed of the truck's entire journey.
Hitung purata laju keseluruhan perjalanan lori itu.

[2 *marks*/*markah*]

Answer/*Jawapan*:

2. Solve each of the following completely.
Selesaikan setiap yang berikut dengan lengkap.

(a) It is given that the speed of a taxi increases from 80 kmh^{-1} to 90 kmh^{-1} in 30 minutes. Calculate the rate of change of speed, in kmh^{-2}, of the taxi's movement.
Diberi laju sebuah teksi bertambah daripada 80 kmj^{-1} kepada 90 kmj^{-1} dalam masa 30 minit. Hitung kadar perubahan laju, dalam kmj^{-2}, pergerakan teksi itu.

[2 *marks*/*markah*]

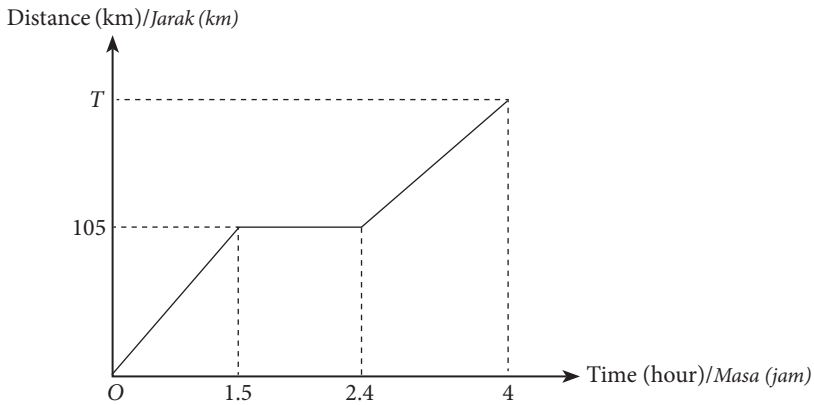
Answer/*Jawapan*:

(b) Syafie moves at a uniform speed of 65 kmh^{-1} in 45 minutes. Calculate the distance, in km, travelled by Syafie in the stated period.
Syafie bergerak dengan kelajuan seragam 65 kmj^{-1} dalam masa 45 minit. Hitung jarak, dalam km, yang dilalui oleh Syafie dalam tempoh tersebut.

[2 *marks*/*markah*]

Answer/*Jawapan*:

3. The distance-time graph shows the journey of a truck from *P* to *R* through *Q*.
Graf jarak-masa menunjukkan perjalanan sebuah lori dari P ke R melalui Q.



(a) Calculate the duration, in minutes, the truck is in city *Q*.
Hitung tempoh masa, dalam minit, lori itu berada di bandar Q.

[1 *mark*/*markah*]

Answer/*Jawapan*:

(b) It is given that the speed of the truck from city *Q* to city *R* is 80 kmh^{-1}. Calculate the value of *T*.
Diberi laju lori itu dari bandar Q ke bandar R ialah 80 kmj^{-1}. Hitung nilai T.

[2 *marks*/*markah*]

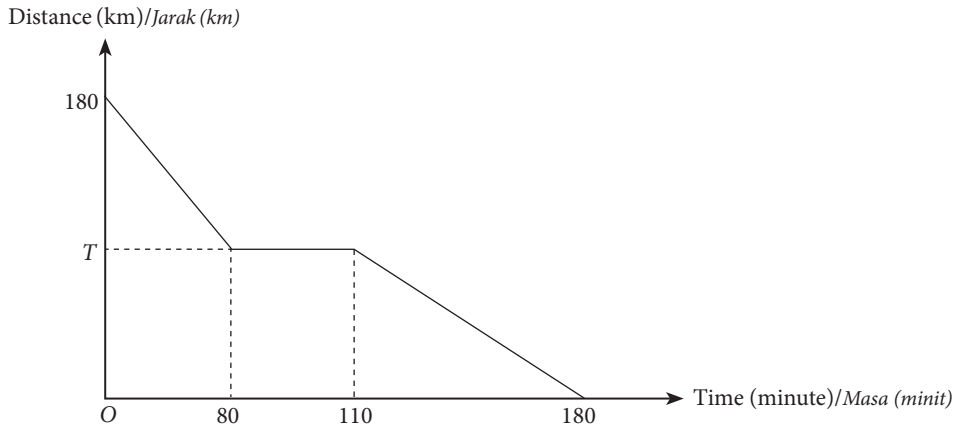
Answer/*Jawapan*:

(c) Calculate the speed, in kmh^{-1}, of the truck's journey from city *P* to city *Q*.
Hitung laju, dalam kmj^{-1}, perjalanan lori itu dari bandar P ke bandar Q.

[2 *marks*/*markah*]

Answer/*Jawapan*:

4. The distance-time graph shows the journey of a car for a period of 180 minutes.
Graf jarak-masa menunjukkan perjalanan sebuah kereta dalam tempoh 180 minit.



(a) Calculate the duration, in hours, the car stops to rest.
Hitung tempoh masa, dalam jam, kereta itu berhenti rehat.

[1 *mark*/*markah*]

Answer/*Jawapan*:

(b) Calculate the value of T given that the speed of the car for the first 80 minutes is 63.75 kmh^{-1}.
Hitung nilai T diberi laju kereta itu bagi tempoh 80 minit pertama ialah 63.75 kmj^{-1}.

[2 *marks*/*markah*]

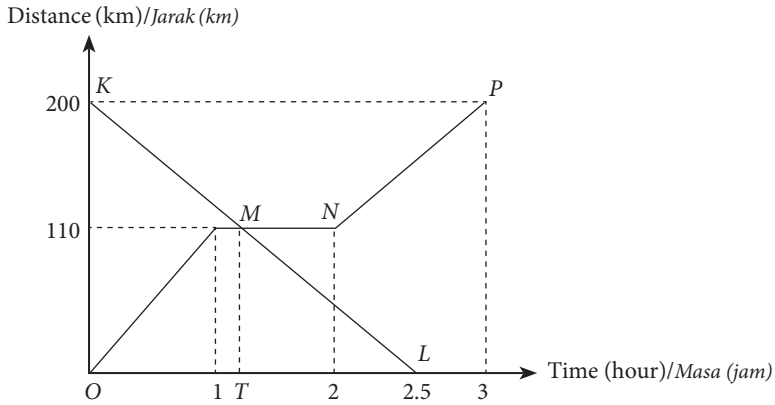
Answer/*Jawapan*:

(c) Calculate the speed, in kmh^{-1}, of the car's journey for the last 70 minutes.
Hitung laju, dalam kmj^{-1}, perjalanan kereta itu bagi tempoh 70 minit terakhir.

[2 *marks*/*markah*]

Answer/*Jawapan*:

5. The distance-time graph shows the journey of two tour buses from Kuala Lumpur to Ipoh and vice versa for a distance of 200 km. Both buses pass the same road at the same time.
Graf jarak-masa menunjukkan perjalanan dua buah bas persiaran dari Kuala Lumpur ke Ipoh dan sebaliknya sejauh 200 km. Kedua-dua bas melalui jalan dan masa yang sama.



The *KL* graph shows the journey of bus *X* from Kuala Lumpur to Ipoh while the *OMNP* graph shows the journey of bus *Y* from Ipoh to Kuala Lumpur.
Graf KL menunjukkan perjalanan bas X dari Kuala Lumpur ke Ipoh manakala graf OMNP menunjukkan perjalanan bas Y dari Ipoh ke Kuala Lumpur.

(a) Calculate the average speed, in kmh^{-1}, for the entire journey of bus *X*.
Hitung purata laju, dalam kmj^{-1}, bagi keseluruhan perjalanan bas X.

[1 *mark*/*markah*]

Answer/*Jawapan*:

(b) Find the distance of bus *Y* to Kuala Lumpur, when it stops for a break.
Cari jarak bas Y ke Kuala Lumpur, semasa ia berhenti rehat.

[2 *marks*/*markah*]

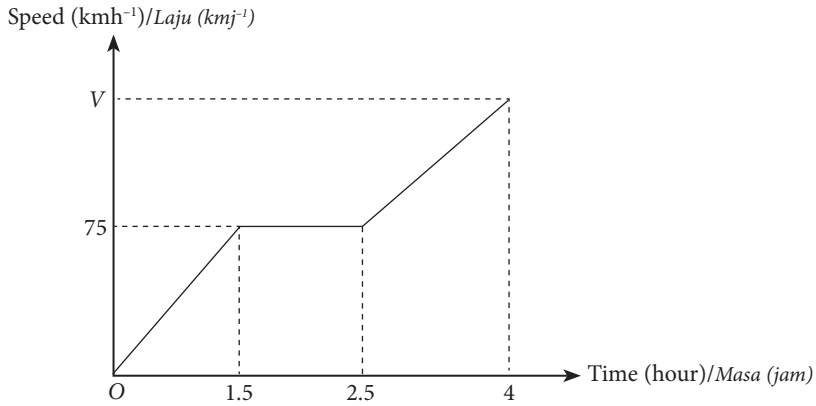
Answer/*Jawapan*:

(c) Calculate the value of *T*.
Hitung nilai T.

[2 *marks*/*markah*]

Answer/*Jawapan*:

6. The speed-time graph shows the journey of a motorcycle from Kulim to Kuala Tanjung Malim.
Graf laju-masa menunjukkan perjalanan sebuah motorsikal dari Kulim ke Kuala Tanjung Malim.



(a) Calculate the duration, in minutes, when the motorcycle travels at a uniform speed.
Hitung tempoh masa, dalam minit, motorsikal itu itu bergerak dengan laju seragam.

[1 *mark*/*markah*]

Answer/*Jawapan*:

(b) Calculate the rate of change of speed, in kmh^{-2}, for the motorcycle's journey in the first 90 minutes.
Hitung kadar perubahan laju, dalam kmj^{-2}, perjalanan motorsikal itu bagi tempoh 90 minit pertama.

[2 *marks*/*markah*]

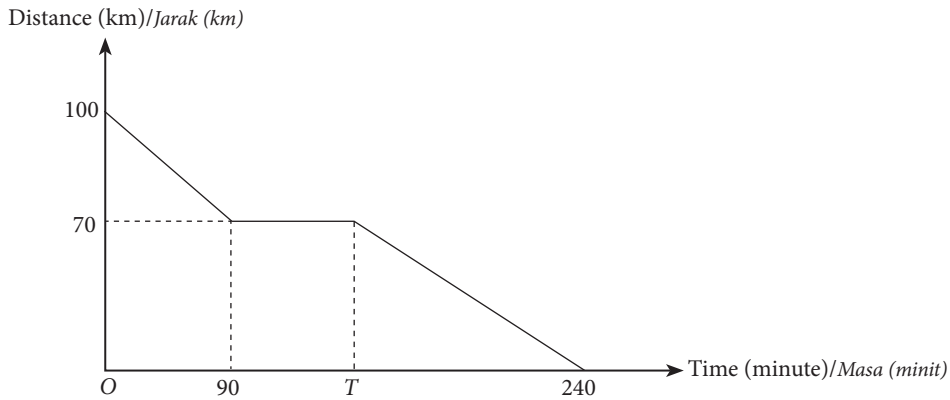
Answer/*Jawapan*:

(c) It is given that the total distance travelled for the entire trip is 255 km, calculate the value of V.
Diberi jumlah jarak yang dilalui bagi keseluruhan perjalanan ialah 255 km, hitung nilai V.

[6 *marks*/*markah*]

Answer/*Jawapan*:

7. The speed-time graph shows the journey of a taxi in 4 hours.
Graf laju-masa menunjukkan perjalanan sebuah teksi dalam tempoh 4 jam.



(a) Calculate the speed, in kmh^{-1}, when the taxi moves at a uniform speed.
Hitung laju, dalam kmj^{-1}, teksi itu bergerak dengan kelajuan seragam.

[1 *mark*/*markah*]

Answer/*Jawapan*:

(b) Calculate the rate of change of speed, in kmh^{-2}, of the taxi's journey for the first 90 minutes.
Hitung kadar perubahan laju, dalam kmj^{-2}, perjalanan teksi itu bagi tempoh 90 minit yang pertama.

[2 *marks*/*markah*]

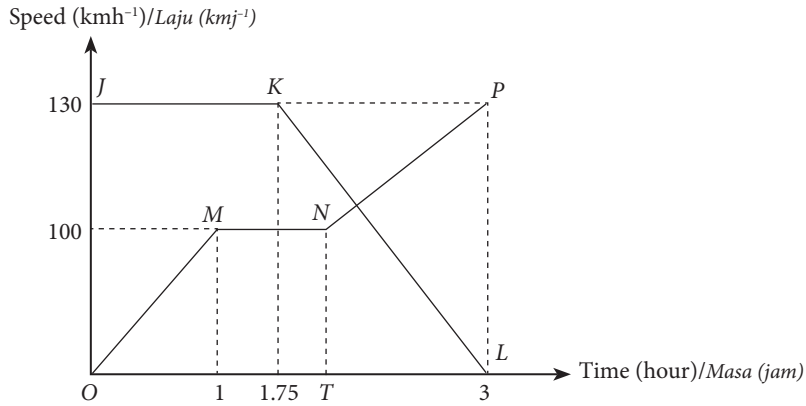
Answer/*Jawapan*:

(c) Calculate the value of T given that the total distance travelled in the last 2.5 hours is 140 km.
Hitung nilai T diberi jumlah jarak yang dilalui dalam tempoh 2.5 jam terakhir ialah 140 km.

[3 *marks*/*markah*]

Answer/*Jawapan*:

8. The speed-time graph shows the movement of two race cars for a period of 3 hours race.
Graf laju-masa menunjukkan pergerakan dua kereta lumba bagi tempoh 3 jam perlumbaan.



The *JKL* graph shows the movement of the Ferrari team while the *OMNP* graph shows the movement of the McLaren team.
Graf JKL menunjukkan pergerakan pasukan Ferrari manakala graf OMNP pergerakan pasukan McLaren.

(a) Calculate the duration, in minutes, when the Ferrari team is moving at a uniform speed.
Hitung tempoh masa, dalam minit, pasukan Ferrari bergerak dengan laju seragam.

[1 *mark*/*markah*]

Answer/*Jawapan*:

(b) Find the distance travelled by the Ferrari team for the entire duration of the race.
Cari jarak yang dilalui oleh pasukan Ferrari bagi tempoh keseluruhan perlumbaan.

[2 *marks*/*markah*]

Answer/*Jawapan*:

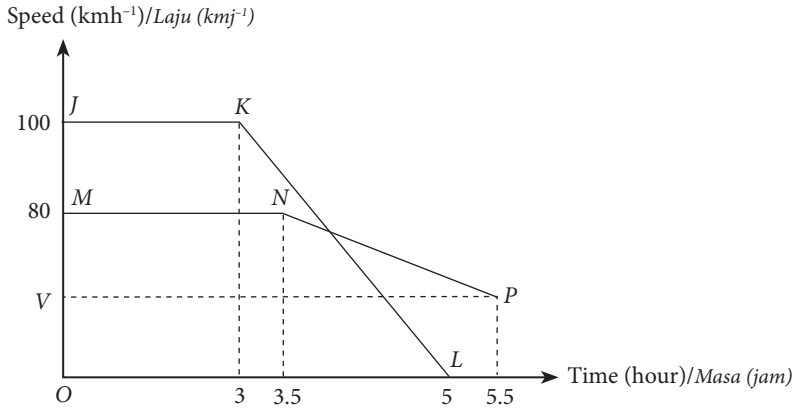
(c) It is given that the Ferrari team won the race after achieved 43.75 km more than the McLaren team. Calculate the value of *T*.
Diberi bahawa pasukan Ferrari muncul juara setelah mencapai 43.75 km lebih daripada pasukan McLaren. Hitung nilai T.

[3 *marks*/*markah*]

Answer/*Jawapan*:

FORM 4

9. The speed-time graph shows the movement of two buses for 400 km from Kangar to Shah Alam and vice versa.
Graf laju-masa menunjukkan pergerakan dua buah bas sejauh 400 km dari Kangar ke Shah Alam dan sebaliknya.



The *JKL* graph shows the movement of bus *X* from Kangar to Shah Alam while the *MNP* graph shows the movement of bus *Y* from Shah Alam to Kangar.
Graf JKL menunjukkan pergerakan bas X dari Kangar ke Shah Alam manakala graf MNP pergerakan bas Y dari Shah Alam ke Kangar.

(a) Calculate the difference in distance, in km, travelled by the two buses when they move at a uniform speed.
Hitung beza jarak, dalam km, yang dilalui bagi kedua-dua bas bergerak dengan laju seragam.

[3 *marks*/*markah*]

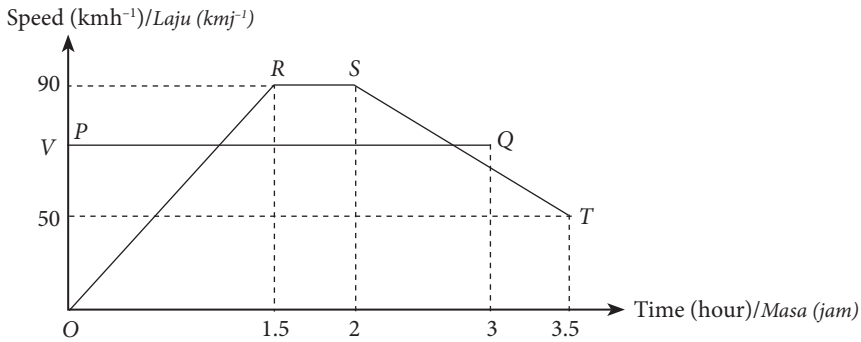
Answer/*Jawapan*:

(b) Calculate the value *V*.
Hitung nilai V.

[3 *marks*/*markah*]

Answer/*Jawapan*:

10. The diagram shows the speed-time graph of Rhea and Dhia driving for a vacation at a hotel in Port Dickson. The *PQ* graph shows Rhea's driving movement and the *ORST* graph shows Dhia's movement where both of them start from the same place and at the same time.
Rajah menunjukkan graf laju-masa pemanduan Rhea dan Dhia untuk bercuti di sebuah hotel di Port Dickson. Graf PQ ialah pergerakan pemanduan Rhea dan graf ORST ialah pergerakan Dhia di mana kedua-duanya bergerak dari tempat dan masa yang sama.



(a) State the duration, in minutes, when Dhia drives at a uniform speed.
Nyatakan tempoh masa, dalam minit, Dhia memandu dengan kelajuan seragam.

[1 *mark*/*markah*]

Answer/*Jawapan*:

(b) If Dhia arrives in Port Dickson at 4.30 in the afternoon, state the time when Rhea starts her drive on that day.
Jika Dhia tiba di Port Dickson pada jam 4.30 petang, nyatakan masa, bagi Rhea memulakan pemanduannya pada hari tersebut.

[2 *marks*/*markah*]

Answer/*Jawapan*:

(c) Calculate the total distance, in km, travelled by Dhia.
Hitung jumlah jarak, dalam km, yang dilalui oleh Dhia.

[5 *marks*/*markah*]

Answer/*Jawapan*:

FORM 4

(d) Calculate the value of V.
Hitung nilai V.

[3 *marks*/*markah*]

Answer/*Jawapan*:

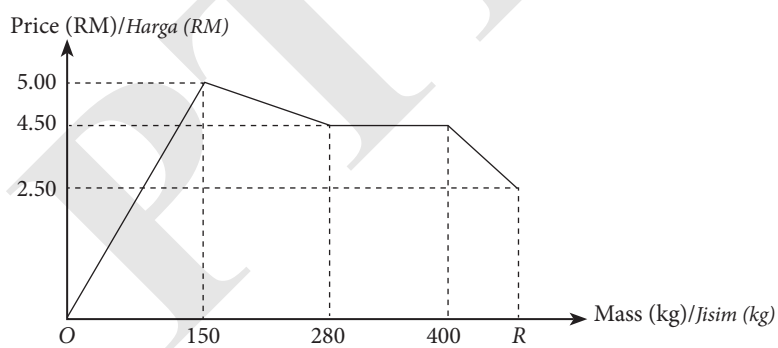
(e) Hitung beza, purata laju, dalam kmj^{-1}, keseluruhan perjalanan mereka.
Calculate the difference of the average speed, in kmh^{-1}, of their entire journey.

[3 *marks*/*markah*]

Answer/*Jawapan*:

---

11. The diagram shows the price-mass graph of rambutan sold by Mr Yong at his fruit stall.
Rajah menunjukkan graf harga-jisim buah rambutan yang dijual oleh Encik Yong di gerai buah-buahan milikinya.



Mr Yong gets a supply of R kg from a seller at a price of RM2.50 for 1 kg.
Encik Yong mendapat bekalan sebanyak R kg daripada penjual dengan harga RM2.50 untuk 1 kg.

(a) Calculate the total income earned by Mr Yong for the sales of the first 400 kg.
Hitung jumlah pendapatan yang diperoleh Encik Yong bagi jualan untuk 400 kg yang pertama.

[2 *mark*/*markah*]

Answer/*Jawapan*:

(b) If Mr Yong gets RM612.50 profit from the total stock of the fruit sold, calculate the total mass, in kg, of rambutan purchased by Mr Yong.
Jika Encik Yong mendapat keuntungan RM612.50 daripada keseluruhan stok buah yang dijual, hitung jumlah jisim, dalam kg, rambutan yang dibeli oleh Encik Yong.

[3 *marks*/*markah*]

Answer/*Jawapan*:

(c) If Mr Yong buys 490 kg for the second stock at the same price per 1 kg, he intends to sell at RM9 per 2 kg. Will Mr Yong earn at least RM960 profit from this sale? Prove your answer.
Jika Encik Yong membeli 490 kg bagi stok yang kedua pada harga yang sama bagi setiap 1 kg, dia bercadang menjual pada harga RM9 bagi setiap 2 kg. Adakah Encik Yong akan memperoleh sekurang-kurangnya keuntungan RM960 daripada jualan ini? Buktikan jawapan anda.

[6 *marks*/*markah*]

Answer/*Jawapan*:

Video PdPR

1. The stem-and-leaf plot graph shows the distribution of marks for 30 students in a test.
Graf plot batang-dan-daun menunjukkan taburan markah bagi 30 orang murid dalam suatu ujian.

9	3	4	5				
8	1	3	4	5			
7	0	0	1	2	7	9	
6	1	3	3	3	3	5	7
5	2	2	2	3	7	8	
4	0	2	4	7			

9 | 3 means/*bermaksud* 93%

(a) State the range of marks most frequently obtained.
Nyatakan julat markah paling kerap diperoleh.

[1 *mark*/*markah*]

Answer/*Jawapan*:

(b) State the mode score of the class.
Nyatakan mod markah bagi kelas ini.

[1 *mark*/*markah*]

Answer/*Jawapan*:

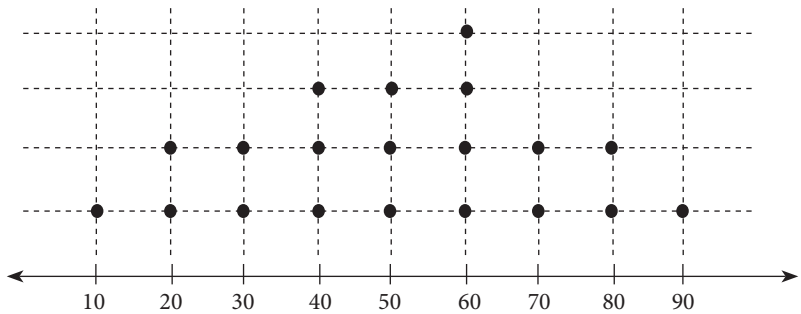
(c) Calculate the mean score of one student.
Hitung min markah bagi seorang murid.

[2 *marks*/*markah*]

Answer/*Jawapan*:

2. The dot plot graph shows the mass, in kg, of garbage collected by a group of volunteers in the 'Clean Our River' campaign.
Graf plot titik menunjukkan jisim, dalam kg, sampah yang dikutip oleh sekumpulan sukarelawan dalam kempen 'Bersihkan Sungai Kita'.

Mass (kg) of Garbage Collected in the 'Clean Our River' Campaign
Jisim (kg) Sampah yang Dikutip dalam Kempen Bersihkan Sungai Kita



(a) State the mode mass of garbage successfully collected.
Nyatakan mod jisim sampah yang berjaya dikutip.

[1 *mark*/*markah*]

Answer/*Jawapan*:

(b) State the median mass of garbage successfully collected.
Nyatakan median jisim sampah yang berjaya dikutip.

[1 *mark*/*markah*]

Answer/*Jawapan*:

(c) Calculate the mean mass, in kg, of garbage successfully collected by one volunteer.
Hitung min jisim, dalam kg, sampah yang berjaya dikutip oleh seorang sukarelawan.

[2 *marks*/*markah*]

Answer/*Jawapan*:

3. The following are the total goals accumulated for the top 5 teams participating in the indoor futsal tournament.
Berikut ialah jumlah jaringan terkumpul bagi 5 pasukan terbaik yang menyertai kejohanan futsal tertutup.

21	29	48	44	35

(a) Determine the range of goals for the team participating in the tournament.
Tentukan julat jaringan bagi pasukan yang menyertai kejohanan itu.

[1 *mark*/*markah*]

Answer/*Jawapan*:

(b) Calculate the mean goal for each team.
Hitung min jaringan bagi setiap pasukan.

[2 *marks*/*markah*]

Answer/*Jawapan*:

(c) If the goals of the sixth best team are calculated together, the mean goal is 32. Calculate the goals made by the sixth team.
Jika jaringan pasukan terbaik keenam dihitung bersama, min jaringan ialah 32. Hitung jaringan yang dihasilkan oleh pasukan ke-enam itu.

[1 *mark*/*markah*]

Answer/*Jawapan*:

4. The data shows the scores obtained by two archers in 6 shots during the selection session conducted in a school.
Data menunjukkan skor yang diperoleh oleh dua orang pemanah dalam 6 bidikan semasa sesi pemilihan yang dijalankan di sebuah sekolah.

Archer *X*/*Pemanah X*	4	10	8	9	10	5
Archer *Y*/*Pemanah Y*	6	8	8	9	7	7

(a) Complete the following information:
Lengkapkan maklumat yang berikut:
[Tunjukkan pengiraan anda]*[Show your calculation]*

	Range of score *Julat antara skor*	Mean score *Min skor*
Archer *X*/*Pemanah X*		
Archer *Y*/*Pemanah Y*		

[4 *marks*/*markah*]

(b) If one archer is to be selected to represent the school, which archer is more suitable to be selected? Justify your answer.
Jika seorang pemanah akan terpilih mewakili sekolah, pemanah yang manakah lebih sesuai dipilih? Berikan justifikasi anda.

[2 *marks*/*markah*]

Answer/*Jawapan*:

FORM 4

5. Complete the table for each of the following data.
Lengkapkan jadual bagi setiap data yang berikut.

The data shows the age, in years, for 7 randomly selected participants of Ironman Langkawi. *Data menunjukkan umur, dalam tahun, bagi 7 orang peserta Ironman Langkawi yang dipilih secara rawak.* 26 38 51 29 43 64 49			
Arrange the data in asccending order: *Susun data secara tertib menaik:*			
Quartile 1/*Kuartil* 1	Median/*Median*	Quartile 3/*Kuartil* 3	Interquartile range *Julat antara kuartil*

6. The data shows the age of 13 participants in a indoor Pétanque game.
Data menunjukkan usia bagi 13 orang peserta dalam permainan petanque tertutup.

15, 13, 37, 28, 26, 11, 67, 56, 32, 18, 37, 46, 78

Complete each of the following:
Lengkapkan setiap yang berikut:

Answer/*Jawapan*:

Quartile 1/*Kuartil* 1: ..... Median/*Median*: .....

Quartile 1/*Kuartil* 1: ..... Interquartile range/*Julat antara kuartil*: .....

[4 *marks*/*markah*]

---

7. Match correctly:
Padankan dengan tepat:

Answer/*Jawapan*:

Variance/ *Varians*	σ	$\frac{\Sigma x^2}{N} - (\overline{x})^2$ @ $\frac{\Sigma(x-\overline{x})^2}{N}$
Standard deviation *Sisihan piawai*	σ^2	$\sqrt{\frac{\Sigma x^2}{N} - (\overline{x})^2}$ @ $\sqrt{\frac{\Sigma(x-\overline{x})^2}{N}}$

[4 *marks*/*markah*]

---

8. The following is the time interval, in minutes, taken by the first seven participants who successfully completed the 5 000 meter event.
Berikut ialah jarak masa, dalam, minit, yang diambil oleh tujuh orang peserta terawal yang berjaya menamatkan larian acara 5 000 meter.

Place ***Kedudukan***	1	2	3	4	5	6	7
Time (min) ***Masa (min)***	15	18	20	23	24	25	29

(a) Calculate each of the following for the above data.
Hitung setiap yang berikut bagi data di atas.
(i) mean/*min*
(ii) variance/*varians*
(iii) standard deviation/*sisihan piawai*

[6 *marks*/*markah*]

Answer/*Jawapan*:

(b) Which measures of dispersion is best to explain the above data? Justify your answer.
Sukatan serakan yang manakah paling baik untuk menerangkan data di atas? Berikan justifikasi anda.

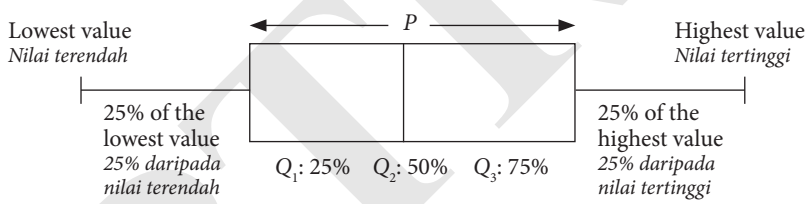
[2 *marks*/*markah*]

Answer/*Jawapan*:

Use the information to answer Question 9.
Gunakan maklumat ini untuk menjawab Soalan 9.

Quartile 3 *Kuartil 3*	Median *Median*	Length of box *Panjang kotak*	Symmetry *Simetri*
All data *Semua data*	Negative skew *Pencong negative*	Quartile 1 *Kuartil 1*	Data centre *Pusat data*

9. (a) Based on the box plot diagram below, solve all the following questions.
Berdasarkan gambar rajah plot kotak di bawah, selesaikan semua soalan yang berikut.



Q_1 = …….. Q_2 = ……..

Q_3 = …….. P = ……..

[4 *marks*/*markah*]

(b) The centre position of the box allows us to know the type of data information distribution whether it is positive skew…… or ……

Kedudukan tengah kotak membolehkan kita mengetahui jenis taburan maklumat data sama ada pencong positif, …… *atau* ……

[2 *marks*/*markah*]

(c) The middle line of the box plot provides information related to……

Garis tengah plot kotak memberikan gambaran berkaitan ……

[1 *mark*/*markah*]

(d) ..... allows us to get information related to the variability of 50% of the data in the middle.

..... *membolehkan kita mendapatkan maklumat berkaitan kebolehubahan 50% data di tengah.*

[1 *mark*/*markah*]

(e) From the length of the box and its lines, we get the information on variability.....

Daripada panjang kotak dan garisannya, kita mendapatkan maklumat tentang kebolehubahan .....

[1 *mark*/*markah*]

---

10. The data shows the shoe size for 18 football players which is under age 18 from SMK Paku.
Data menunjukkan saiz kasut bagi 18 orang pemain bola sepak bawah 18 tahun SMK Paku.

6	9	10	11	8	9	8	7	10
7	6	8	6	9	11	7	9	9

(a) Based on the data above, arrange the data in ascending order.
Berdasarkan data di atas, susun data mengikut tertib menaik.

[1 *mark*/*markah*]

Answer/*Jawapan*:

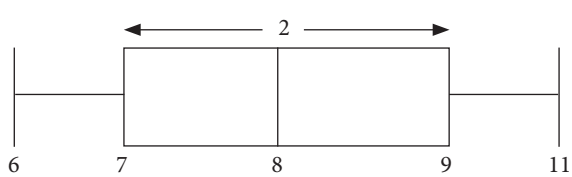
(b) From (a), mark (✓) the correct answer for each of the following:
Daripada (a), tandakan [✓] pada jawapan yang betul untuk setiap yang berikut:

(i)	Mode/*Mod*	[ ]	9	[ ]	10
(ii)	Quartile 1/*Kuartil 1*	[ ]	7	[ ]	7.5
(iii)	Median/*Median*	[ ]	8	[ ]	8.5
(iv)	Quartile 3/*Kuartil 3*	[ ]	9	[ ]	9.5
(v)	Interquartile range/*Julat antara kuartil*	[ ]	3	[ ]	2

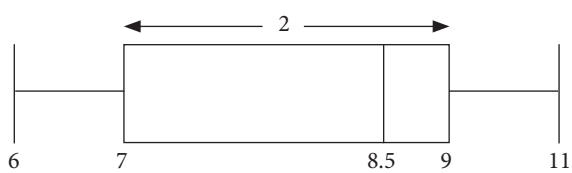
[5 *marks*/*markah*]

(c) Which box plot represents the information above?
Plot kotak yang manakah mewakili maklumat di atas?

(i) [ ]



(ii) [ ]



[1 *mark*/*markah*]

Video PdPR

Questions 1 to 4 are based on the information below.
Soalan 1 hingga 4 berdasarkan maklumat di bawah.

The table below shows the six prefects who are on duty at the school assembly.
Jadual di bawah menunjukkan enam orang pengawas bertugas dalam majlis perhimpunan sekolah.

Male prefect/*Pengawas lelaki*	Andre (A), Bakhtiar (B), Celvin (C)
Female prefect/*Pengawas perempuan*	Dora (D), Ellina (E), Farah (F)

1. Two prefects are selected, one from each gender respectively. List all the outcomes.
Dua orang pengawas dipilih masing-masing seorang daripada setiap jantina. Senaraikan semua kesudahan.
[2 *marks*/*markah*]

Answer/*Jawapan*:

2. Two prefects are selected one after another to be the chairman of the assembly. List all the outcomes.
Dua orang pengawas dipilih seorang demi seorang untuk menjadi pengerusi majlis. Senaraikan semua kesudahan.
[2 *marks*/*markah*]

Answer/*Jawapan*:

3. Two prefects are selected to read the pledge and raise the flag. List all the outcomes.
Dua orang pengawas dipilih untuk membaca ikrar dan menaikkan bendera. Senaraikan semua kesudahan.
[2 *marks*/*markah*]

Answer/*Jawapan*:

4. Two prefects are selected to check the students' name tags. List all the outcomes.
Dua orang pengawas dipilih untuk memeriksa tanda nama murid. Senaraikan semua kesudahan.
[2 *marks*/*markah*]

Answer/*Jawapan*:

5. There are five cards labelled COVID in a container. Two cards are randomly selected from the container with replacement.
Terdapat lima keping kad berlabel COVID di dalam sebuah bekas. Dua keping kad dipilih secara rawak dari bekas itu dengan penggantian.

(a) List the sample space.
Senaraikan ruang sampel.

[2 *marks*/*markah*]

Answer/*Jawapan*:

(b) By listing all the outcomes, calculate the probabilities
Dengan menyenaraikan semua kesudahan, hitung kebarangkalian

(i) the first card is labelled with the letter *V* and the second card is labelled with a vowel letter,
kad pertama berlabel huruf V dan kad kedua berlabel huruf vokal,

[2 *marks*/*markah*]

Answer/*Jawapan*:

(ii) the first card is labelled with the letter I or the second card is labelled with the letter *D*.
kad pertama berlabel huruf I atau kad kedua berlabel huruf D.

[2 *marks*/*markah*]

Answer/*Jawapan*:

---

6. There are seven cards labelled SPM 2021 in a container. Two cards are randomly selected from the container without replacement.
Terdapat tujuh keping kad berlabel SPM 2021 dalam sebuah bekas. Dua keping kad dipilih secara rawak dari bekas itu tanpa penggantian.

(a) List the sample space.
Senaraikan ruang sampel.

[2 *marks*/*markah*]

Answer/*Jawapan*:

(b) By listing all the outcomes, calculate the probabilities
Dengan menyenaraikan semua kesudahan, hitung kebarangkalian

(i) the first card is labelled with the letter *P* and the second card is labelled 1,
kad pertama berlabel huruf P dan kad kedua berlabel 1,

[2 *marks*/*markah*]

Answer/*Jawapan*:

(ii) the first card is labelled with the letter *M* and the second card is labelled with a prime number,
kad pertama berlabel huruf M dan kad kedua berlabel nombor perdana,

[2 *marks*/*markah*]

Answer/*Jawapan*:

(iii) both cards are labelled with letters or both cards are labelled with numbers.
kedua-dua kad berlabel huruf atau kedua-dua kad berlabel angka.

[2 *marks*/*markah*]

Answer/*Jawapan*:

FORM 4

---

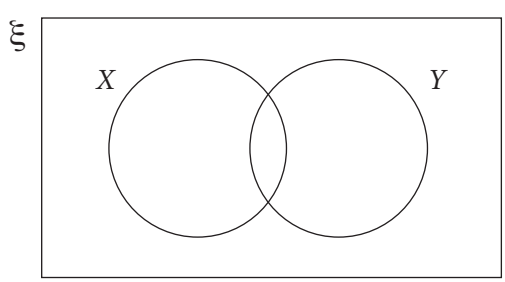
7. Given that the probability that team *X* and team *Y* will win in a futsal match are $\frac{3}{5}$ and $\frac{7}{9}$ respectively.

Diberi kebarangkalian pasukan X dan Y akan menang dalam satu perlawanan futsal masing-masing ialah $\frac{3}{5}$ *dan* $\frac{7}{9}$.

(a) Complete the Venn diagram to represent the information.
Lengkapkan gambar rajah Venn bagi mewakilkan maklumat tersebut.

[3 *marks*/*markah*]

Answer/*Jawapan*:



(b) Calculate the probability that team *X* and team *Y* win the match.
Hitung kebarangkalian bahawa pasukan X dan Y menang dalam perlawanan itu.

[1 *mark*/*markah*]

Answer/*Jawapan*:

(c) Calculate the probability that only team *X* wins the match.
Hitung kebarangkalian bahawa hanya pasukan X yang menang dalam perlawanan itu.

[1 *mark*/*markah*]

Answer/*Jawapan*:

(d) Calculate the probability that team *X* or team *Y* win the match.
Hitung kebarangkalian bahawa pasukan X atau Y menang dalam perlawanan itu.

[2 *marks*/*markah*]

Answer/*Jawapan*:

---

8. In a container, there are 5 red marbles, 4 yellow marbles and 3 green marbles. Two marbles are randomly selected one by one without replacement.
Dalam sebuab bekas, terdapat 5 biji guli merah, 4 biji guli kuning dan 3 biji guli hijau. Dua biji guli dipilih secara rawak satu demi satu tanpa penggantian.

(a) Using a tree diagram, list all the outcomes.
Menggunakan gambar rajah pokok, senaraikan semua kesudahan.

[2 *marks*/*markah*]

Answer/*Jawapan*:

(b) Calculate the probability
Hitung kebarangkalian

(i) both marbles are green,
kedua-dua guli berwarna hijau,

[2 *marks*/*markah*]

Answer/*Jawapan*:

(ii) the two marbles are not the same colour.
kedua-dua guli tidak sama warna.

[2 *marks*/*markah*]

Answer/*Jawapan*:

FORM 4

---

9. The diagram below shows five cards labelled with even and odd numbers in a container.
Rajah di bawah menunjukkan lima keping kad berlabel nombor genap dan nombor ganjil dalam sebuah bekas.

3	6	1	5	9

Two cards are randomly selected from the container without replacement.
Dua keping kad dipilih secara rawak dari bekas itu tanpa penggantian.

(a) List the sample space.
Senaraikan ruang sampel.

[2 *marks*/*markah*]

Answer/*Jawapan*:

(b) By listing all the outcomes, calculate the probability that
Dengan menyenaraikan semua kesudahan, hitung kebarangkalian bahawa

(i) the first number is "9" and the second number is the prime number,
nombor pertama ialah "9" dan nombor kedua nombor perdana,

[2 *marks*/*markah*]

Answer/*Jawapan*:

(ii) cards of different labels are selected.
kad berlainan label dipilih.

[2 *marks*/*markah*]

Answer/*Jawapan*:

---

10. The diagram below shows five cards labelled with letters and numbers in a container.
Rajah di bawah menunjukkan lima keping kad berlabel huruf dan angka dalam sebuah bekas.

Q	7	*X*	5	*U*

Two cards are randomly selected from the container with replacement.
Dua keping kad dipilih secara rawak dari bekas itu dengan penggantian.

(a) List the sample space.
Senaraikan ruang sampel.

[2 *marks*/*markah*]

Answer/*Jawapan*:

(b) By listing all the outcomes, calculate the probability that
Dengan menyenaraikan semua kesudahan, hitung kebarangkalian bahawa

(i) the first number is a consonant letter and the second number is labelled as a number,
nombor pertama ialah huruf konsonan dan nombor kedua berlabel angka,

[2 *marks*/*markah*]

Answer/*Jawapan*:

(ii) card with the same label is selected.
kad sama label dipilih.

[2 *marks*/*markah*]

Answer/*Jawapan*:

11. The diagram below shows five cards labelled with uppercase and lowercase letters in a container.
Rajah di bawah menunjukkan lima keping kad berlabel huruf besar dan huruf kecil dalam sebuah bekas.

h	*S*	*U*	*e*	*F*

A card is randomly selected from the container and recorded. If a card labelled with lowercase is selected, the card is placed back into the container and if the card is labelled with uppercase, the card is not placed back. Then, a second card is randomly selected from the container.
Sekeping kad dipilih secara rawak dari bekas itu dan dicatatkan. Jika mendapat kad berlabel huruf kecil, kad itu dimasukkan semula ke dalam bekas itu dan jika kad itu berlabel huruf besar, kad itu tidak dimasukkan semula. Kemudian, kad kedua dipilih secara rawak dari bekas itu.

(a) List the sample space.
Senaraikan ruang sampel.

[2 *marks*/*markah*]

Answer/*Jawapan*:

FORM 4

(b) By listing all the outcomes, calculate the probability that
Dengan menyenaraikan semua kesudahan, hitung kebarangkalian bahawa

(i) the first number is labelled "*S*" and the second number is labelled "*h*",
nombor pertama berlabel "S" dan nombor kedua berlabel "h",

[2 *marks*/*markah*]

Answer/*Jawapan*:

(ii) cards of different labels are selected.
kad berlainan label dipilih.

[2 *marks*/*markah*]

Answer/*Jawapan*:

12. The table below shows the selected students representing the class in a general knowledge quiz.
Jadual di bawah menunjukkan murid yang terpilih mewakili kelas ke kuiz pengetahuan am.

	Male/*Lelaki*	Female/*Perempuan*
5 UUM	4	3
5 UKM	6	2

(a) Two participants are selected from the female student group. Calculate the probability of students from the same class being selected.
Dua orang peserta dipilih dari kumpulan murid perempuan. Hitung kebarangkalian murid dari kelas yang sama dipilih.
[3 *marks*/*markah*]

Answer/*Jawapan*:

(b) Two students are selected, each from 5 UUM and 5 UKM respectively. Calculate the probability of students of different genders being selected.
Dua orang murid dipilih masing-masing seorang dari 5 UUM dan seorang dari 5 UKM. Hitung kebarangkalian murid berlainan jantina dipilih.
[3 *marks*/*markah*]

Answer/*Jawapan*:

---

13. In a camping activity attended by six male students and four female students, two students will be selected to write a daily report and they will be exempted from making a report for the next day.
Dalam satu aktiviti perkhemahan yang disertai oleh enam orang murid lelaki dan empat orang murid perempuan, dua orang murid akan dipilih untuk menulis laporan harian dan mereka akan dikecualikan daripada membuat laporan pada hari berikutnya.

(a) Calculate the probability that a male student and a female student are selected to write a report on the first day.
Hitung kebarangkalian seorang murid lelaki dan seorang murid perempuan dipilih untuk menulis laporan pada hari pertama.
[3 *marks*/*markah*]

Answer/*Jawapan*:

(b) Given that the students of different genders are selected to write a report on the first day and they are exempted from writing a report on the second day. Calculate the probability that students of the same gender is selected to write a report on the second day.
Diberi bahawa murid berlainan jantina dipilih untuk menulis laporan pada hari pertama dan mereka dikecualikan daripada menulis laporan pada hari kedua. Hitung kebarangkalian murid sama jantina dipilih untuk menulis laporan pada hari kedua.

[3 *marks*/*markah*]

Answer/*Jawapan*:

---

14. The diagram below shows a few numbers in two boxes.
Rajah di bawah menunjukkan beberapa nombor di dalam dua kotak.

4	5	2	9	1

Box *P*/*Kotak P*

3	6	7

Box *Q*/*Kotak Q*

Two cards are randomly selected, one from each box where the number is recorded as a two-digit number.
Dua keping kad dipilih secara rawak masing-masing dari setiap kotak di mana nombor itu dicatat sebagai suatu nombor dua digit.

(a) List the sample space.
Senaraikan ruang sampel.

[2 *marks*/*markah*]

Answer/*Jawapan*:

(b) By listing all the outcomes, calculate the probabilities
Dengan menyenaraikan semua kesudahan, hitung kebarangkalian

(i) cards labelled with even numbers and multiples of 4 are selected,
kad berlabel nombor genap dan nombor gandaan 4 dipilih,

[2 *marks*/*markah*]

Answer/*Jawapan*:

(ii) card labelled with a prime number or card with perfect square number is selected.
kad berlabel nombor perdana atau kad bernombor kuasa dua sempurna dipilih.

[2 *marks*/*markah*]

Answer/*Jawapan*:

FORM 4

15. The diagram below shows a few numbers in two boxes.
Rajah di bawah menunjukkan beberapa nombor dalam dua buah kotak.

3	5	9	4

Box *P*/*Kotak P*

1	2	7	8

Box *Q*/*Kotak Q*

Two cards are randomly selected, one from box *P* followed by box *Q* respectively.
Dua keping kad dipilih secara rawak masing-masing satu dari kotak P diikuti kotak Q.

(a) List the sample space.
Senaraikan ruang sampel.

[2 *marks*/*markah*]

Answer/*Jawapan*:

(b) By listing all the outcomes, calculate the probabilities
Dengan menyenaraikan semua kesudahan, hitung kebarangkalian

(i) the first card is labelled with the number "4" and the second card is labelled with an odd number,
kad pertama berlabel nombor "4" dan kad kedua berlabel nombor ganjil,

[2 *marks*/*markah*]

Answer/*Jawapan*:

(ii) the first card is labelled with a number larger than 5 or the second card is labelled "2".
kad pertama berlabel dengan nombor lebih besar daripada nilai 5 atau kad kedua berlabel "2".

[2 *marks*/*markah*]

Answer/*Jawapan*:

16. The diagram below shows a few letters and numbers in two boxes.
Rajah di bawah menunjukkan beberapa huruf dan angka di dalam dua buah kotak.

V	*D*	6

Box *X*/*Kotak X*

Q	4	3	2

Box *Y*/*Kotak Y*

A card is randomly selected from box *X* and recorded. The card is then placed in box *Y*, before the second card is randomly selected from box *Y*.
Sekeping kad dipilih secara rawak dari kotak X dan dicatatkan. Kad itu kemudian dimasukkan ke dalam kotak Y, sebelum kad kedua dipilih secara rawak dari kotak Y.

(a) List the sample space.
Senaraikan ruang sampel.

[2 *marks*/*markah*]

Answer/*Jawapan*:

FORM 4

(b) By listing all the outcomes, calculate the probabilities
Dengan menyenaraikan semua kesudahan, hitung kebarangkalian

(i) card labelled with the same number is selected,
kad berlabel dengan angka yang sama dipilih,

[2 *marks*/*markah*]

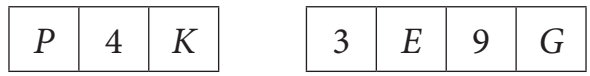
Answer/*Jawapan*:

(ii) cards of different labels are selected.
kad berlainan label dipilih.

[2 *marks*/*markah*]

Answer/*Jawapan*:

17. The diagram below shows a few letters and numbers in two boxes.
Rajah di bawah menunjukkan beberapa huruf dan angka di dalam dua buah kotak.



Box *X*/*Kotak X* Box *Y*/*Kotak Y*

A card is randomly selected from box *X* and recorded. If a card labelled with letter is selected, the second card is randomly selected from box *X* but if the card is labelled with number, the second card will be selected from box *Y*.
Sekeping kad dipilih secara rawak dari kotak X dan dicatatkan. Jika mendapat kad berlabel huruf, kad kedua dipilih secara rawak dari kotak X tetapi jika kad itu berlabel angka, kad kedua akan dipilih dari kotak Y.

(a) List the sample space.
Senaraikan ruang sampel.

[2 *marks*/*markah*]

Answer/*Jawapan*:

(b) By listing all the outcomes, calculate the probabilities
Dengan menyenaraikan semua kesudahan, hitung kebarangkalian

(i) the first card is labelled "4" and the second card is labelled with letter,
kad pertama berlabel "4" dan kad kedua berlabel huruf,

[2 *marks*/*markah*]

Answer/*Jawapan*:

(ii) the first card is labelled "*K*" or the second card is labelled "9".
kad pertama berlabel "K" atau kad kedua berlabel "9".

[2 *marks*/*markah*]

Answer/*Jawapan*:

Video PdPR

1. State 5 processes of Financial Management.
Nyatakan 5 proses Pengurusan Kewangan.

(a) .....

(b) .....

(c) .....

(d) .....

(e) .....

[5 *marks*/*markah*]

2. Name three goals in financial management.
Namakan tiga matlamat dalam pengurusan kewangan.

(a) .....

(b) .....

(c) .....

[3 *marks*/*markah*]

3. Give **two** differences between short-term goals and long-term goals.
*Berikan **dua** perbezaan matlamat jangka pendek dan matlamat jangka panjang.*

(a) .....

(b) .....

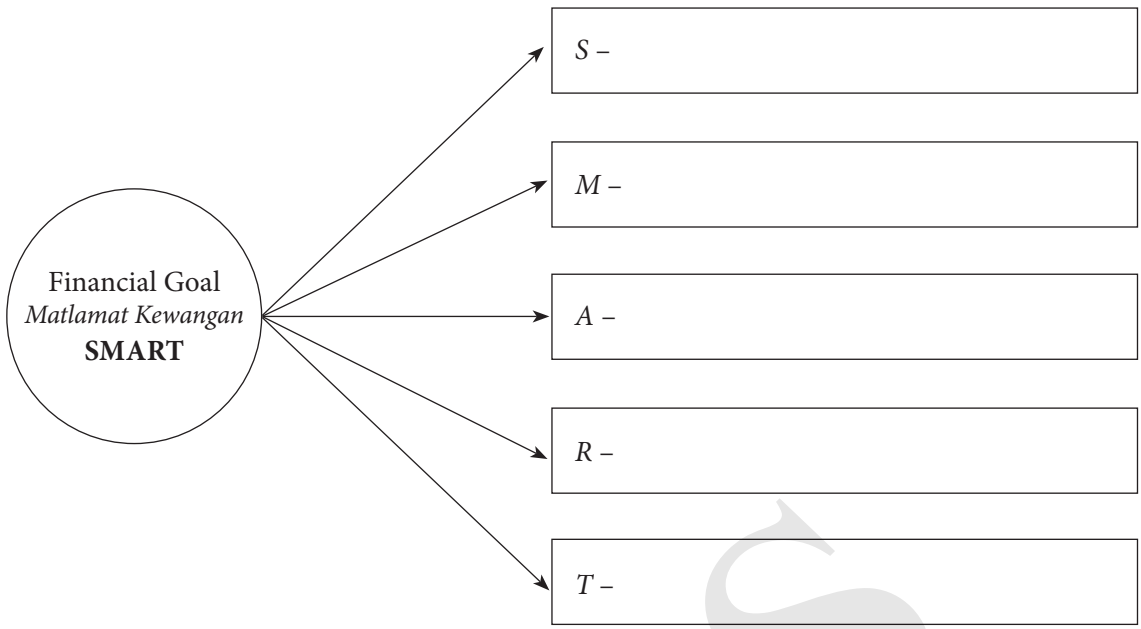
[2 *marks*/*markah*]

4. Give two examples for each of the following financial term goals.
Berikan dua contoh bagi setiap matlamat jangka kewangan yang berikut.

Short-term goals ***Matlamat jangka pendek***	**Long-term goals** ***Matlamat jangka panjang***

[4 *marks*/*markah*]

5. Write the meaning of each acronym.
Tuliskan maksud bagi setiap akronim yang tersebut.



[5 *marks*/*markah*]

---

6. Describe any three steps that need to be considered before we create a financial plan. Describe each of the steps.
Huraikan mana-mana tiga langkah yang perlu diambil kira sebelum kita mewujudkan pelan kewangan. Huraikan setiap langkah tersebut.

1 .....

.....

2 .....

.....

3 .....

.....

[3 *marks*/*markah*]

7. Read the situation for each of the following. Next, determine the type of cash flow for the situation and justify your answer.
Baca situasi bagi setiap yang berikut. Seterusnya, tentukan jenis aliran tunai bagi situasi tersebut dan berikan justifikasi kepada jawapan anda.

(a) Mr Rayyan works as a clerk with a monthly salary of RM2 500 and has a passive income of RM300 per month. His monthly fixed expenses are RM500 for house rental, RM250 for utility bills, RM350 for car loan instalment as well as RM700 for variable expenses per month. Explain your answer regarding Mr Rayyan's cash flow.
Encik Rayyan bekerja sebagai seorang kerani dengan gaji bulanan RM2 500 dan mempunyai pendapatan pasif sebanyak RM300 sebulan. Dia mempunyai perbelanjaan tetap bulanan iaitu sewa rumah RM500, bil utiliti RM250, ansuran kereta RM350 selain perbelanjaan tidak tetap berjumlah RM700 sebulan. Jelaskan jawapan anda berkenaan aliran tunai Encik Rayyan.

[2 *marks*/*markah*]

Answer/*Jawapan*:

(b) Puan Zakiah has a monthly income of RM3 500 and has no other income. She has a monthly fixed expenses of RM1, 500 for house rental, RM350 for utility bills, RM850 for car loan instalment as well as RM1 000 for variable expenses per month. Explain your answer regarding Puan Zakiah's cash flow.
Puan Zakiah mempunyai pendapatan bulanan RM3 500 dan tidak mempunyai pendapatan lain. Dia mempunyai perbelanjaan tetap bulanan iaitu sewa rumah RM1 500, bil utiliti RM350, ansuran kereta RM850 selain perbelanjaan tidak tetap berjumlah RM1 000 sebulan. Jelaskan jawapan anda berkenaan aliran tunai Puan Zakiah.

[2 *marks*/*markah*]

Answer/*Jawapan*:

8. The following is Mr Azman's family financial plan and actual cash flow for September.
Berikut ialah pelan kewangan keluarga Encik Azman dan aliran tunai sebenar bagi bulan September.

	Financial plan *Pelan kewangan* (RM)	Actual cash flow *Aliran tunai sebenar* (RM)
Net salary of Mr Azman *Gaji bersih Encik Azman*	4 600	4 600
Net salary of Mr Azman's wife *Gaji bersih isteri Encik Azman*	3 000	3 000
Passive income *Pendapatan pasif*	1 000	1 000
Total monthly income *Jumlah pendapatan bulanan*	8 600	8 600
Minus fixed monthly savings *Tolak simpanan tetap bulanan* (10% of monthly income) *(10% daripada pendapatan bulanan)*	860	860
Minus savings for emergency fund *Tolak simpanan kecemasan*	150	150
Income balance *Baki pendapatan*	7 590	7 590
Minus monthly fixed expenses ***Tolak perbelanjaan tetap bulanan*** Housing loan *Pinjaman perumahan*	2400	2400
Loan instalments for two cars *Ansuran dua kereta*	1 100	1 100
Insurance premiums *Premium insuran*	350	350
Education loan payment (PTPTN) *Bayaran pinjaman pendidikan (PTPTN)*	300	300
Children's nursery *Bayaran pengasuh anak*	600	600
Internet subscription package *Pakej langganan internet*	100	100
Total monthly fixed expenses *Jumlah perbelanjaan tetap bulanan*	4 850	4 850
Minus total monthly variable expenses ***Tolak jumlah pendapatan perbelanjaan tidak tetap bulanan*** Children's school expenses *Belanja persekolahan anak-anak*	300	300
Home utilities *Utiliti rumah*	450	300
Petrol and toll expenses *Belanja petrol dan tol*	300	350
Groceries *Barangan dapur*	800	750
Allowances for parents *Pemberian saguhati kepada ibubapa*	500	500
Savings for end of year vacation *Simpanan untuk percutian hujung tahun*	300	300
Total variable income *Jumlah pendapatan tidak tetap*	2 650	2 500
Surplus of income / deficit *Pendapatan lebihan / kurangan*	90	240

(a) Does Mr Azman manage his financial effectively?
Justify your answer.
Adakah Encik Azman seorang yang bijak menguruskan kewangan?
Beri justifikasi anda.

[2 *marks*/*markah*]

Answer/*Jawapan*:

(b) Mr Azman plans to buy a laptop worth RM6 000 within the next 8 months.
Encik Azman merancang untuk membeli sebuah laptop yang berharga RM6 000 dalam tempoh 8 bulan akan datang.

(i) Calculate the monthly savings that need to be saved by Mr Azman for that purpose.
Hitung simpanan bulanan yang perlu disimpan oleh Encik Azman bagi tujuan tersebut.

[2 *marks*/*markah*]

Answer/*Jawapan*:

(ii) If Mr Azman adopts the SMART concept, prove that Mr Azman adheres to measurable aspects (M – Measurable) and duration (T – Time bound).
Jika Encik Azman seorang yang mengamalkan konsep SMART, buktikan bahawa Encik Azman mematuhi aspek boleh diukur (M – Measurable) dan tempoh masa (T – Time bound).

[2 *marks*/*markah*]

Answer/*Jawapan*:

(iii) Give three suggestions on how Mr Azman can maintain a positive financial plan.
Berikan tiga cadangan bagaimana Encik Azman dapat mengekalkan pelan kewangan yang positif.

[2 *marks*/*markah*]

Answer/*Jawapan*:

9. Mr Benedict and his wife want to buy a house within 5 years of their marriage. Their total monthly income is RM7 500 and the total fixed expenses are RM5 500. They plan to buy a bungalow worth RM650 000 by making a 10% down payment of the house price. The balance is through local bank housing loans.
Encik Benedict dan isteri ingin membeli sebuah rumah dalam masa 5 tahun selepas mereka berkahwin. Jumlah pendapatan bulanan mereka ialah RM7 500 dan jumlah perbelanjaan tetap ialah RM5 500. Mereka bercadang untuk membeli sebuah rumah banglow yang berharga RM650 000 dengan membuat 10% bayaran pendahuluan daripada harga rumah itu. Selebihnya melalui pinjaman perumahan bank tempatan.

(a) Explain Mr Benedict's cash flow.
Jelaskan aliran tunai Encik Benedict.

[2 *marks*/*markah*]

Answer/*Jawapan*:

(b) How much is the monthly savings, in RM, that Mr Benedict and his wife need to save to achieve that goal?
Berapakah simpanan bulanan, dalam RM, yang perlu disimpan oleh Encik Benedict dan isterinya bagi mencapai matlamat tersebut?

[2 *marks*/*markah*]

Answer/*Jawapan*:

(c) Is it wise for Mr Benedict to buy a house priced at RM650 000? Give two justifications.
Adakah Encik Benedict seorang yang bijaksana dari segi pembelian rumah pada harga RM650 000 itu? Berikan dua justifikasi anda.

[3 *marks*/*markah*]

Answer/*Jawapan*:

10. Mr Lee Wei works as an engineer with a monthly net salary of RM4 750. He also earns an estimated monthly commission of RM800 from the sale of health products. Apart from that, he also earns rent from his second house at RM1 200 per month.
Encik Lee Wei bekerja sebagai seorang jurutera dengan gaji bersih bulanan RM4 750. Dia juga memperoleh komisen bulanan dianggarkan sebanyak RM800 hasil jualan produk kesihatan. Selain itu, dia juga memperoleh hasil sewaan rumah keduanya sebanyak RM1 200 sebulan.

The following is his estimated monthly expenses.
Berikut ialah anggaran perbelanjaan bulanan beliau.

Monthly expenses/*Perbelanjaan bulanan*	**(RM)**
Housing loan instalment for first house/*Bayaran ansuran rumah pertama*	2 300
Housing loan instalment for second house/*Bayaran ansuran rumah kedua*	1 100
Groceries/*Perbelanjaan dapur*	900
Utilities payment/*Bayaran Utiliti*	350
Petrol and toll expenses/*Belanja petrol dan tol*	300
Insurance premiums/*Premium insurans*	120
Allowances for parents/*Pemberian saguhati kepada ibu bapa*	300
Newspapers, magazines and sports equipment *Pembelian akhbar, majalah dan peralatan sukan*	150
Fine dining/*Makan di restoran terkenal*	180

Mr Lee Wei sets 10% of his net salary as monthly fixed savings and RM100 as emergency savings.
Encik Lee Wei menetapkan 10% daripada gaji bersihnya sebagai simpanan tetap bulanan dan RM100 sebagai simpanan kecemasan.

(a) Complete the following personal financial plan for Mr Lee Wei.
Lengkapkan pelan kewangan peribadi untuk Encik Lee Wei yang berikut.

	Financial plan/*Pelan kewangan* (RM)	
Net salary/*Gaji bersih* Passive income (commission and rental) *Pendapatan pasif (komisen dan sewaan)*	4 750 2 000	
Total monthly income/*Jumlah pendapatan bulanan*		6 750
Minus monthly savings/*Tolak simpanan tetap bulanan* (10% of net income)/*(10% daripada gaji bersih)* Minus savings for emergency fund *Tolak simpanan kecemasan*		
Income balance/*Baki pendapatan*		
Minus monthly fixed expenses/*Tolak perbelanjaan tetap bulanan* House rentals (First and second houses) *Sewaan rumah (rumah pertama dan kedua)*	120	
Total monthly fixed expenses/*Jumlah perbelanjaan tetap bulanan*		3 520
Minus monthly variable expenses ***Tolak jumlah perbelanjaan tidak tetap bulanan*** Home utilities/*Utiliti rumah* Petrol and toll expenses/*Belanja petrol dan tol* Groceries/*Barangan dapur* Allowances for parents/*Pemberian saguhati kepada ibubapa* Newspapers, magazines and sports equipment *Majalah, akhbar dan peralatan sukan* Fine dining/*Makan di restoran terkenal*	 350 300 900 300 150 180	
Total variable expenses/*Jumlah perbelanjaan tidak tetap*		2 180
Surplus of income/deficit /*Pendapatan lebihan / kurangan*		

[5 *marks*/*markah*]

(b) Give your comments on the surplus or deficit that will be faced by Mr Lee Wei.
Kemukakan komen anda tentang lebihan atau kurangan yang akan dialami oleh Encik Lee Wei.

[2 *marks*/*markah*]

Answer/*Jawapan*:

(c) Mr Lee Wei wants to buy a smart phone worth RM6 000 within 5 months. Is he able to achieve his goal? Justify your answer.
Encik Lee Wei ingin membeli sebuah telefon pintar berharga RM6 000 dalam masa 5 bulan. Adakah dia mampu mencapai matlamatnya? Berikan justifikasi anda.

[3 *marks*/*markah*]

Answer/*Jawapan*:

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11. The following are incomplete monthly income and expenditure estimates for Mr Joseph.
Berikut ialah anggaran pendapatan dan perbelanjaan bulanan yang tidak lengkap bagi Encik Joseph.

Income/*Pendapatan*		**Expenditure/*Perbelanjaan***	
Items/*Barang*	**RM**	**Items/*Barang***	**RM**
Salary/*Gaji*	1 575	House rental *Sewa rumah*	650
Allowances/*Elaun*	700	Car loan instalment *Ansuran kereta*	500
Overtime pay *Bayaran lebih masa*	500	Utility Bills *Bil utiliti*	250
Bonus and others *Bonus dan lain-lain*	*X*	Groceries *Belanja dapur*	700
		Insurance *Insurans*	175
		ASB savings *Simpanan ASB*	*Y*
Total at the end of the month *Jumlah akhir bulan*	3 025		3 025

(a) Based on Mr Joseph's income and expenditure balance record, calculate the value of *X* and the value of *Y*.
Berdasarkan rekod imbangan pendapatan dan perbelanjaan Encik Joseph, hitung nilai X dan nilai Y.

[2 *marks*/*markah*]

Answer/*Jawapan*:

(b) If Mr Joseph wants to obtain dental treatment amounting to RM250 in that particular month, state one type of expenditure that can be modified during that month. Give your justification on how the expenses can be modified.
Jika Encik Joseph ingin mendapatkan rawatan pergigian berjumlah RM250 pada bulan tersebut, nyatakan satu perbelanjaan yang boleh diubah suai pada bulan tersebut. Berikan justifikasi anda bagaimana perbelanjaan itu boleh diubahsuai.

[1 *mark*/*markah*]

Answer/*Jawapan*:

(c) If in the following month, Mr Joseph receives an additional 25% overtime payment and an additional RM15 of bank savings interest. In addition, the cost for utility bills increased by RM35 and groceries expenses increased by 15%, complete Mr Joseph's income and expenditure balance for that month.
Jika pada bulan berikutnya, Encik Joseph mendapat pendapatan tambahan 25% hasil bayaran lebih masa dan tambahan RM15 daripada faedah simpanan bank. Selain itu, kos untuk bil utiliti bertambah RM35 dan belanja dapur bertambah sebanyak 15%, lengkapkan imbangan pendapatan dan perbelanjaan Encik Joseph pada bulan tersebut.

[5 *marks*/*markah*]

Answer/*Jawapan*:

(d) Mr Joseph intends to buy a house worth RM300 000 with 100% financing from a bank which charges a fixed interest rate of 2.5% per annum for a period of 30 years. In your opinion, is Mr Joseph able to realize his dream? Give your justification by showing calculations to support your opinion.
Encik Joseph berhasrat untuk membeli sebuah rumah berharga RM300 000 dengan pembiayaan 100% dari sebuah bank yang mengenakan kadar faedah tetap 2.5% setahun bagi tempoh 30 tahun. Pada pendapat anda, adakah Encik Joseph mampu untuk merealisasikan hasrat tersebut? Berikan justifikasi anda dengan menunjukkan pengiraan bagi menyokong pendapat anda.

[5 *marks*/*markah*]

Answer/*Jawapan*:

Video PdPR

1. Write each of the following statements in equation form.
Tuliskan setiap pernyataan yang berikut dalam bentuk persamaan.

	Statement *Pernyataan*	Equation *Persamaan*
(a)	The price for a three-flavoured sea bass, P varies directly as the price of a sea bass, Q. *Harga bagi hidangan siakap tiga rasa, P berubah secara langsung dengan harga bagi seekor ikan siakap, Q.*	
(b)	The price of a house, R varies directly as the price of raw materials, S. *Harga sebuah rumah, R berubah secara langsung dengan harga bahan mentah, S.*	
(c)	Wages for an employee, T varies directly as the number of seats, U he produces. *Upah bagi seorang pekerja, T berubah secara langsung dengan jumlah kerusi, U yang dihasilkannya.*	
(d)	The amount of fees, V for a visit to Melaka varies directly as the number of participants, W who participated in the visit. *Jumlah yuran, V untuk lawatan ke Melaka berubah secara langsung dengan jumlah peserta, W yang menyertai lawatan itu.*	
(e)	The price of a used car auctioned, X depends on the number of bidders, Y who participated in the auction sale. *Harga sebuah kereta terpakai yang dilelong, X bergantung kepada bilangan pembida, Y yang menyertai jualan lelongan itu.*	

[5 *marks*/*markah*]

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2. Solve each of the following.
Selesaikan setiap yang berikut.

(a) Given x varies directly as y and $x = 21$ when $y = 3$, express x in terms of y.
Diberi x berubah secara langsung dengan y dan x = 21 apabila y = 3, ungkapkan x dalam sebutan y.

[2 *marks*/*markah*]

(b) Given x varies directly as the square of y and $x = 96$ when $y = 8$, express x in terms of y.
Diberi x berubah secara langsung dengan kuasa dua y dan x = 96 apabila y = 8, ungkapkan x dalam sebutan y.

[2 *marks*/*markah*]

Answer/*Jawapan*:

3. (a) The volume, V cm^3 of a cylinder varies directly as the height, x cm of the cylinder. The volume of the cylinder is 50 cm^3 when its height is 10 cm. Write an equation to relate x and V.
Isi padu, V cm^3 sebuah silinder berubah secara langsung dengan tinggi, x cm silinder itu. Isi padu silinder itu ialah 50 cm^3 apabila tingginya 10 cm. Tulis satu persamaan yang menghubungkan x dan V.

[2 *marks*/*markah*]

(b) Find the height of the cylinder when its volume is 150 cm^3.
Cari tinggi silinder apabila isi padunya ialah 150 cm^3.

[1 *mark*/*markah*]

Answer/*Jawapan*:

---

4. Given $m \propto \sqrt{n-5}$ and $m = 60$ when $n = 230$, find the value of
Diberi $m \propto \sqrt{n-5}$ dan $m = 60$ apabila $n = 230$, cari nilai

(a) m when $n = 405$,
m apabila n = 405,

[2 *marks*/*markah*]

(b) n when $m = 64$.
n apabila m = 64.

[2 *marks*/*markah*]

Answer/*Jawapan*:

5. Table 1 shows the values of variables x and y.
Jadual 1 menunjukkan nilai-nilai bagi pemboleh ubah x dan y.

x	10	P	490
y	2	8	Q

Table 1/*Jadual 1*

Given that x varies directly as the square of y, find the value of P and the value of Q.
Diberi x berubah secara langsung dengan kuasa dua y, cari nilai P dan nilai Q.

[4 *marks*/*markah*]

Answer/*Jawapan*:

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6. Given that $x \propto y^2z$, express x in terms of y and z if $x = 10$ when $y = 5$ and $z = 10$.
Diberi bahawa $x \propto y^2z$, ungkapkan x dalam sebutan y dan z jika x = 10 apabila y = 5 dan z = 10.

[2 *marks*/*markah*]

Answer/*Jawapan*:

---

7. Given that x varies inversely as the square of y and $x = 2$ when $y = 5$, express x in terms of y.
Diberi x berubah secara songsang dengan kuasa dua y dan x = 2 apabila y = 5, ungkapkan x dalam sebutan y.

[2 *marks*/*markah*]

Answer/*Jawapan*:

8. Given $m \propto \frac{1}{\sqrt{n+5}}$ and $m = 40$ when $n = 4$, find the value of

Diberi $m \propto \frac{1}{\sqrt{n+5}}$ *dan* $m = 40$ *apabila* $n = 4$, *cari nilai*

(a) m when $n = 20$,
m apabila n = 20,

[2 *marks*/*markah*]

(b) n when $m = 30$.
n apabila m = 30.

[2 *marks*/*markah*]

Answer/*Jawapan*:

FORM 5

9. Ramli cuts a piece of cardboard into a few triangle shapes to be used in art class. Given the area of the triangle, L cm^2 being cut varies directly as the base, x cm and height, y cm. The size of the first triangle cut is $L = 20$ cm, $x = 5$ cm and $y = 8$ cm.

Ramli menggunting sekeping kadbod kepada beberapa bentuk segi tiga untuk digunakan semasa kelas pendidikan seni. Diberi luas segi tiga, L cm^2 yang digunting berubah secara langsung dengan tapak, x cm dan tinggi, y cm. Ukuran segi tiga pertama yang digunting ialah L = 20 cm, x = 5 cm dan y = 8 cm.

(a) Write the relation between L with x and y in the form of variation.
Tulis hubungan antara L dengan x dan y dalam bentuk ubahan.

[1 *mark*/*markah*]

(b) Ramli cuts the second triangle with the base size increases by 10 cm and the height measurement decreases by 2 cm. Calculate the area of the second triangle.
Ramli menggunting segi tiga yang kedua dengan ukuran tapak bertambah sebanyak 10 cm dan ukuran tinggi berkurang sebanyak 2 cm. Hitung luas segi tiga yang kedua itu.

[2 *marks*/*markah*]

Answer/*Jawapan*:

10. The speed, S of a moving car varies inversely as time, T. Given $S = 60$ when $T = 1.5$,
Laju, S sebuah kereta yang sedang bergerak berubah secara songsang dengan masa, T. Diberi S = 60 apabila T = 1.5,

(a) express S in terms of T,
ungkapkan S dalam sebutan T,

[2 *marks*/*markah*]

(b) the value of T when $S = 100$.
nilai T apabila S = 100.

[1 *mark*/*markah*]

Answer/*Jawapan*:

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11. Given the volume, V of a cylindrical water tank varies directly as the square of the radius, j and height, h. Given $V = 1\ 540\ cm^3$ when the radius is 7 cm and the height is 10 cm,
Diberi isi padu, V sebuah tangki air berbentuk silinder berubah secara langsung dengan kuasa dua jejari, j dan tinggi, h. Diberi V = 1 540 cm³ apabila jejari 7 cm dan tinggi 10 cm,

(a) express V in terms of j and h,
ungkapkan V dalam sebutan j dan h,

[2 *marks*/*markah*]

(b) find the value of h when $V = 15\ 400$ and $j = 14$,
cari nilai h apabila V = 15 400 dan j = 14,

[2 *marks*/*markah*]

(c) find the value of j when $V = 13\ 860$ and $h = 10$.
cari nilai j apabila V = 13 860 dan h = 10.

[2 *marks*/*markah*]

Answer/*Jawapan*:

12. Match the following.
Padankan yang berikut.

(a)	p varies directly as y and inversely with x. *p berubah secara langsung dengan y dan secara songsang dengan x.*	$y \propto \frac{x}{p}$
(b)	x varies directly as y and p. *x berubah secara langsung dengan y dan p.*	$p \propto \frac{x}{y}$
(c)	p varies directly as x and inversely with y. *p berubah secara langsung dengan x dan secara songsang dengan y.*	$x \propto \frac{y}{p}$

[3 *marks*/*markah*]

13. Write an equation for each of the following statements.
Tuliskan persamaan bagi setiap pernyataan yang berikut.

	Statement ***Pernyataan***	**Equation** ***Persamaan***
(a)	E varies directly as F and G. Given $E = -48$ when $F = 8$ and $G = 3$. *E berubah secara langsung dengan F dan G. Diberi $E = -48$ apabila $F = 8$ dan $G = 3$.*	
(b)	G varies inversely as H and J. Given $G = 2$ when $H = 3$ and $J = 5$. *G berubah secara songsang dengan H dan J. Diberi $G = 2$ apabila $H = 3$ dan $J = 5$.*	
(c)	S varies directly as T and inversely as U. Given $S = 4$ when $T = 2$ and $U = 5$. *S berubah secara langsung dengan T dan secara songsang dengan U. Diberi $S = 4$ apabila $T = 2$ dan $U = 5$.*	
(d)	V varies directly as W and inversely as X. Given $V = \frac{5}{4}$ when $W = 1$ and $X = 6$. *V berubah secara langsung dengan W dan secara songsang dengan X. Diberi $V = \frac{5}{4}$ apabila $W = 1$ dan $X = 6$.*	
(e)	X varies directly as Y and inversely as Z. Given $X = -10$ when $Y = -0.5$ and $Z = 4$. *X berubah secara langsung dengan Y dan secara songsang dengan Z. Diberi $X = -10$ apabila $Y = -0.5$ dan $Z = 4$.*	

[5 *marks*/*markah*]

14. Table 2 shows some values for variables *X*, *Y* and *Z*.
Jadual 2 menunjukkan beberapa nilai bagi pemboleh ubah X, Y dan Z.

X	12	*n*
Y	6	4
Z	9	2

Table 2/*Jadual 2*

Given *X* varies directly as the square of *Y* and inversely as *Z*, find the value of *n*.
Diberi X berubah secara langsung dengan kuasa dua Y dan secara songsang dengan Z, cari nilai n.

[3 *marks*/*markah*]

Answer/*Jawapan*:

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15. A school rents several buses for an educational tour in Terengganu. The fare, *T* per passenger varies directly as the number of buses, *B* rented and inversely as twice the number of seats, *D* per bus. The fare is RM12.50 if 3 buses with each bus consisting of 40 seats are used.
Sebuah sekolah menyewa beberapa buah bas untuk lawatan sambil belajar di Terengganu. Kadar tambang, T seorang penumpang berubah secara langsung dengan bilangan bas, B yang disewa dan secara songsang dengan dua kali bilangan tempat duduk, D bagi setiap bas. Kadar tambang ialah RM12.50 sekiranya 3 buah bas dengan setiap bas terdiri daripada 40 tempat duduk digunakan.

(a) Calculate the fare for a passenger if the school rents 8 buses with the same number of seats.
Hitung kadar tambang seorang penumpang jika pihak sekolah menyewa 8 buah bas dengan bilangan tempat duduk yang sama.

[2 *marks*/*markah*]

(b) If the number of seats for 6 buses is increased to 50 per bus, calculate the fare charged.
Jika bilangan tempat duduk bagi 6 buah bas ditingkatkan kepada 50 bagi setiap bas, hitung kadar tambang yang dikenakan.

[2 *marks*/*markah*]

(c) Calculate the number of buses used if the fare charged is RM80 and the number of seats provided for each bus is only 25.
Hitung bilangan bas yang digunakan jika kadar tambang yang dikenakan ialah RM80 dan bilangan tempat duduk yang disediakan bagi setiap bas hanya 25.

[2 *marks*/*markah*]

Answer/*Jawapan*:

Video PdPR

1. Using the matrix method, calculate the values of b and d.
Menggunakan kaedah matriks, hitung nilai b dan d.

$$2b + 3d = 16$$
$$2b - 7d = -24$$

[6 *marks*/*markah*]

Answer/*Jawapan*:

2. Using the matrix method, calculate the values of f and g.
Menggunakan kaedah matriks, hitung nilai f dan g.

$$-f + 2g = -7$$
$$2f + 5g = -4$$

[6 *marks*/*markah*]

Answer/*Jawapan*:

3. Using the matrix method, calculate the values of m and n.
Menggunakan kaedah matriks, hitung nilai m dan n.

$$-3m + 2n = -10$$
$$-5m + 3n = -18$$

[6 *marks*/*markah*]

Answer/*Jawapan*:

4. Using the matrix method, calculate the values of p and q.
Menggunakan kaedah matriks, hitung nilai p dan q.

$$4p - 3q = -6$$
$$5p - q = -13$$

[6 *marks*/*markah*]

Answer/*Jawapan*:

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5. Using the matrix method, calculate the values of x and y.
Menggunakan kaedah matriks, hitung nilai x dan y.

$$3x + 5y = -12$$
$$-4x - 3y = 5$$

[6 *marks*/*markah*]

Answer/*Jawapan*:

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6. The price for a pen is RMx and the price for a book is RMy. Latifah paid RM60 for the purchase of 6 pens and 2 books. The price difference for 5 pens and 3 books bought by Safura is RM29. Using the matrix method, calculate the price for a pen and a book.
Harga bagi sebatang pen ialah RMx dan harga bagi sebuah buku ialah RMy. Latifah membayar RM60 untuk pembelian 6 batang pen dan 2 buah buku. Beza harga bagi 5 batang pen dan 3 buah buku yang dibeli oleh Safura ialah RM29. Menggunakan kaedah matriks, hitung harga bagi sebatang pen dan sebuah buku.

[6 *marks*/*markah*]

Answer/*Jawapan*:

7. Ramli bought 130 cows and ducks to donate to a charity event. The total number of feets of cows and ducks is 290. Using the matrix method, find the number of cows and the number of ducks donated.
Ramli membeli 130 ekor lembu dan itik untuk disumbangkan kepada suatu majlis amal. Jumlah kaki lembu dan itik ialah 290. Menggunakan kaedah matriks, cari bilangan lembu dan bilangan itik yang disumbangkan.

[6 *marks*/*markah*]

Answer/*Jawapan*:

8. Diagram 1 shows an advertisement for a circus show. Encik Halim brought his wife, parents and 4 children aged 16, 13, 10 and 7 to the circus show. The total price for the tickets is RM86. Given the total price for an adult ticket and a child ticket is RM19.
Rajah 1 menunjukkan iklan bagi suatu pertunjukan sarkas. Encik Halim membawa isteri, ibu bapanya dan 4 orang anak yang berusia 16 tahun, 13 tahun, 10 tahun dan 7 tahun ke pertunjukan sarkas itu. Jumlah bayaran tiket yang dikenakan ialah RM86. Diberi jumlah harga bagi sekeping tiket dewasa dan sekeping tiket kanak-kanak ialah RM19.

Diagram 1/*Rajah 1*

(a) Write two linear equations that represent the above information.
Tuliskan dua persamaan linear yang mewakili maklumat di atas.

[2 *marks*/*markah*]

(b) Next, using the matrix method, calculate the price for an adult ticket and a child ticket.
Seterusnya, menggunakan kaedah matriks, hitung harga bagi sekeping tiket dewasa dan sekeping tiket kanak-kanak.

[6 *marks*/*markah*]

Answer/*Jawapan*:

9. (a) Find the inverse for $\begin{pmatrix} -3 & -4 \\ 5 & 8 \end{pmatrix}$.

Cari songsangan bagi $\begin{pmatrix} -3 & -4 \\ 5 & 8 \end{pmatrix}$.

[2 *marks*/*markah*]

(b) Using the matrix method, find the values of x and y that satisfy the equation:
Menggunakan kaedah matriks, cari nilai x dan y yang memuaskan persamaan:

$$-3x - 4y = -18$$
$$5x + 8y = 34$$

[4 *marks*/*markah*]

Answer/*Jawapan*:

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10. (a) Given $\frac{1}{m}\begin{pmatrix} -2 & n \\ -4 & 3 \end{pmatrix}$ is the inverse of $\begin{pmatrix} 3 & -1 \\ 4 & -2 \end{pmatrix}$, find the values of m and n.

Diberi $\frac{1}{m}\begin{pmatrix} -2 & n \\ -4 & 3 \end{pmatrix}$ *ialah songsangan bagi* $\begin{pmatrix} 3 & -1 \\ 4 & -2 \end{pmatrix}$, *cari nilai m dan n.*

[2 *marks*/*markah*]

(b) Using the matrix method, find the values of p and q that satisfy the equation:
Menggunakan kaedah matriks, cari nilai p dan q yang memuaskan persamaan:

$$3p - q = -15$$
$$4p - 2q = -22$$

[4 *marks*/*markah*]

Answer/*Jawapan*:

11. (a) Given $m\begin{pmatrix} 5 & -3 \\ -6 & -4 \end{pmatrix}$ is the inverse of $\begin{pmatrix} -4 & n \\ 6 & 5 \end{pmatrix}$, find the values of m and n.

Diberi $m\begin{pmatrix} 5 & -3 \\ -6 & -4 \end{pmatrix}$ *ialah songsangan bagi* $\begin{pmatrix} -4 & n \\ 6 & 5 \end{pmatrix}$, *cari nilai m dan n.*

[2 *marks*/*markah*]

(b) Using the matrix method, find the values of u and v that satisfy the equation:
Menggunakan kaedah matriks, cari nilai u dan v yang memuaskan persamaan:

$$-4u + 3v = 6$$
$$6u + 5v = -28$$

[4 *marks*/*markah*]

Answer/*Jawapan*:

FORM 5

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12. (a) Given $P = \begin{pmatrix} 2 & 4 \\ -3 & -8 \end{pmatrix}$ and $PQ = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$, find matrix Q.

Diberi $P = \begin{pmatrix} 2 & 4 \\ -3 & -8 \end{pmatrix}$ *dan* $PQ = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$, *cari matriks Q.*

[2 *marks*/*markah*]

(b) Using the matrix method, find the values of x and y that satisfy the equation:
Menggunakan kaedah matriks, cari nilai x dan y yang memuaskan persamaan:

$$P\begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} -2 \\ 7 \end{pmatrix}$$

[4 *marks*/*markah*]

Answer/*Jawapan*:

13. (a) Given $P = \begin{pmatrix} -6 & -3 \\ m & 7 \end{pmatrix}$, find the value of m if given that P has no inverse.

Diberi $P = \begin{pmatrix} -6 & -3 \\ m & 7 \end{pmatrix}$, *cari nilai m jika diberi P tiada songsangan.*

[2 *marks*/*markah*]

(b) Given $m = 15$, calculate the values of x and y that satisfy the equation $P\begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} -3 \\ 8.5 \end{pmatrix}$.

Diberi $m = 15$, *hitung nilai x dan y yang memuaskan persamaan* $P\begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} -3 \\ 8.5 \end{pmatrix}$.

[4 *marks*/*markah*]

Answer/*Jawapan*:

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14. Shahrom bought 3 shirts priced at RMp per piece and 2 pants priced at RMq per piece. Hakim bought 5 similar shirts and 3 similar pants. Shahrom paid RM375 for his purchase while Hakim paid RM220 more than Shahrom. Using the matrix method, calculate the price for a shirt and a pants they bought.

Shahrom membeli 3 helai kemeja berharga RMp sehelai dan 2 helai seluar berharga RMq sehelai. Hakim membeli 5 helai kemeja dan 3 helai seluar yang sama. Shahrom membayar RM375 untuk pembeliannya manakala Hakim membayar RM220 lebih daripada Shahrom. Menggunakan kaedah matriks, hitung harga bagi sehelai kemeja dan sehelai seluar yang dibeli oleh mereka.

[6 *marks*/*markah*]

Answer/*Jawapan*:

15. Table 1 shows the number of questions answered by three groups in a quiz competition in one hour.
Jadual 1 menunjukkan jumlah soalan yang dijawab oleh tiga kumpulan dalam suatu pertandingan kuiz dalam masa satu jam.

Group *Kumpulan*	**Correct** *Betul*	**Wrong** *Salah*
Sigma	37	3
Theta	40	9
Delta	41	13

Table 1/*Jadual 1*

Each question answered correctly is given x marks and the question answered wrongly is given y marks. The Sigma group managed to collect 287 marks while Theta group managed to collect 293 marks.
Setiap soalan yang betul diberi x markah dan soalan yang salah diberi y markah. Kumpulan Sigma berjaya mengumpul 287 markah manakala kumpulan Theta berjaya mengumpul 293 markah.

(a) Using the matrix method, find the values of x and y.
Menggunakan kaedah matriks, cari nilai x dan y.

[4 *marks*/*markah*]

(b) Which group won the quiz competition?
Kumpulan yang manakah memenangi pertandingan kuiz tersebut?

[2 *marks*/*markah*]

Answer/*Jawapan*:

1. Table 1 shows the annual premium rate for every RM1 000 face value offered by Syarikat Insurans Sri Matang.
Jadual 1 menunjukkan kadar premium tahunan bagi setiap RM1 000 nilai muka yang ditawarkan oleh Syarikat Insurans Sri Matang.

Plan *Pelan*	31 years old/*tahun* (RM)		32 years old/*tahun* (RM)		33 years old/*tahun* (RM)	
	Non-smoking *Tidak merokok*	Smoking *Merokok*	Non-smoking *Tidak merokok*	Smoking *Merokok*	Non-smoking *Tidak merokok*	Smoking *Merokok*
5 years *5 tahun*	3.24	3.74	3.31	3.85	3.36	4.05
10 years *10 tahun*	3.12	3.62	3.24	3.78	3.32	4.01
Renewed annually *Boleh baharu tahunan*	3.05	3.55	3.17	3.62	3.23	3.99

Table 1/*Jadual 1*

(a) Irfan is a healthy 32-years-old man who does not smoke. He bought a 10-year plan with a face value of RM250 000. Calculate the annual premium to be paid.
Irfan ialah seorang lelaki berumur 32 tahun yang sihat dan tidak merokok. Dia membeli pelan bertempoh 10 tahun dengan nilai muka RM250 000. Hitung premium tahunan yang perlu dibayarnya.

[3 *marks*/*markah*]

(b) When Irfan wants to subscribe for 10-year insurance, the insurance agent of suggested that he buy an annual renewable plan. Calculate the annual premium if Irfan changes his mind to buy an annual renewable plan with the same face value of RM250 000.
Semasa Irfan ingin membeli insurans bertempoh 10 tahun, ejen insurans mencadangkan untuk dia membeli pelan boleh baharu tahunan. Hitung premium tahunan sekiranya Irfan berubah fikiran untuk membeli pelan boleh baharu tahunan dengan nilai muka yang sama, iaitu RM250 000.

[3 *marks*/*markah*]

Answer/*Jawapan*:

2. Table 2 shows the premium proportions under Motor Tariff for motor policies issued in Peninsular Malaysia, Sabah and Sarawak.
Jadual 2 menunjukkan perkadaran premium di bawah Tarif Motor bagi polisi motor yang dikeluarkan di Semenanjung Malaysia, Sabah dan Sarawak.

Engine capacity does not exceed *Kapasiti enjin tidak melebihi* (cc)	**Peninsular Malaysia** *Semenanjung Malaysia*		**Sabah and Sarawak** *Sabah dan Sarawak*	
	Comprehensive policy *Polisi komprehensif* **(RM)**	**Third party policy** *Polisi pihak ketiga* **(RM)**	**Comprehensive policy** *Polisi komprehensif* **(RM)**	**Third party policy** *Polisi pihak ketiga* **(RM)**
1 400	273.80	120.60	196.20	67.50
1 650	305.50	135.00	220.00	75.60
2 200	339.10	151.20	243.90	85.20
3 050	372.60	167.40	266.50	93.60
4 100	404.30	181.80	290.40	101.70
4 250	436.00	196.20	313.00	110.10
4 400	469.60	212.40	336.90	118.20
Melebihi *Exceed* 4 400	501.30	226.80	359.50	126.60

Table 2/*Jadual 2*

Mr. Joseph has moved from Kuala Lumpur to Kota Kinabalu. He brought his 5-year-old four-wheel vehicle with a capacity of 2.5 cc. The amount to be insured of his vehicle is RM70 000. Given the NCD in the 6th year is 55%. Calculate the gross premium of motor insurance for the comprehensive policy, the third party, fire and theft policy, and the third party policy.
Encik Joseph telah berpindah dari Kuala Lumpur ke Kota Kinabalu. Dia membawa bersama kenderaan jenis pacuan empat roda berkapasiti 2.5 cc yang berusia 5 tahun. Jumlah yang ingin diinsuranskan untuk kenderaan itu ialah RM70 000. Diberi NCD pada tahun ke-6 ialah 55%. Hitung premium kasar bagi insurans motor untuk polisi komprehensif, polisi pihak ketiga, kebakaran dan kecurian, dan polisi pihak ketiga.

[5 *marks*/*markah*]

Answer/*Jawapan*:

3. Syarikat Lemongrass Sdn Bhd has three lorries for the use of their company. They have vehicle insurance for each lorry with a deductible allocation of RM940 per lorry. During the insurance period, the three lorries had accidents and the losses suffered are as in the Table 3.
Syarikat Lemongrass Sdn. Bhd. mempunyai tiga buah lori untuk kegunaan syarikat. Mereka mempunyai insurans kenderaan bagi setiap lori dengan peruntukan deduktibel sebanyak RM940 bagi setiap lori. Sepanjang tempoh insurans tersebut, ketiga-tiga lori tersebut telah mengalami kemalangan dan kerugian yang dialami adalah seperti dalam Jadual 3.

Lorry *Lori*	**Loss (RM)** *Kerugian (RM)*
A	780
B	1 000
C	2 370

Table 3/*Jadual 3*

State the compensation that can be claimed for each loss suffered.
Nyatakan bayaran pampasan yang boleh dituntut bagi setiap kerugian yang dialami.

[4 *marks*/*markah*]

Answer/*Jawapan*:

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4. Encik Manaf has purchased a medical insurance with a co-insurance provision. If Encik Manaf has to bear RM2 200 of his total medical bill amounting to RM11 000, what percentage of co-insurance of the insurance policy?
Encik Manaf membeli insurans perubatan dengan peruntukan ko-insurans. Jika Encik Manaf perlu menanggung sebanyak RM2 200 daripada keseluruhan bil perubatannya yang berjumlah RM11 000, berapakah peratusan ko-insurans bagi polisi insurans tersebut?

[4 *marks*/*markah*]

Answer/*Jawapan*:

5. Sabarina bought a policy of fire insurance for her house worth RM300 000 which requires 80% co-insurance. The market value for her house is RM400 000. An explosion occurred while Sabarina was cooking which resulted in a loss of RM90 000. How much compensation can Sabarina claim from the insurance company?
Sabarina membeli polisi insurans kebakaran untuk rumahnya bernilai RM300 000 yang memerlukan ko-insurans sebanyak 80%. Nilai pasaran rumahnya ialah RM400 000. Satu letupan telah berlaku ketika Sabarina sedang memasak yang telah mengakibatkan kerugian sebanyak RM90 000. Berapakah jumlah pampasan yang boleh dituntut oleh Sabarina daripada syarikat insurans?

[5 *marks*/*markah*]

Answer/*Jawapan*:

6. Encik Shahlan's shop has suffered a fire and the loss suffered is RM130 000. The shop has fire insurance with co-insurance of 80% and deductible of RM8 000. If the current value of the shop is RM500 000 and the total compensation received by Encik Shahlan is RM95 000, calculate the amount of insurance that Encik Shahlan has bought for his shop?
Kedai Encik Shahlan telah mengalami kebakaran dan kerugian yang dialami ialah RM130 000. Kedai itu mempunyai insurans kebakaran dengan ko-insurans 80% dan deduktibel RM8 000. Jika nilai semasa kedai itu ialah RM500 000 dan jumlah pampasan yang telah diterima oleh Encik Shahlan ialah RM95 000, hitung jumlah insurans yang telah dibeli oleh Encik Shahlan untuk kedainya?

[5 *marks*/*markah*]

Answer/*Jawapan*:

Video PdPR

1. Puan Hasmah has an annual income of RM114 000 including allowances in the year 2020. It is given that the allowance of RM14 400 is tax exempted. She also donated RM500 to a local library. Table 1 shows the tax reliefs claimed by Puan Hasmah.
Puan Hasmah memperoleh pendapatan tahunan sebanyak RM114 000 termasuk elaun pada tahun 2020. Diberi bahawa elaun berjumlah RM14 400 dikecualikan cukai. Beliau juga telah menderma sebanyak RM500 kepada sebuah perpustakaan tempatan. Jadual 1 menunjukkan pelepasan cukai yang dituntut oleh Puan Hasmah.

Item/*Perkara*	**Amount/*Jumlah* (RM)**
Individual/*Individu*	9 000
Education and medical insurance (limited to RM3 000) *Insurans pendidikan dan perubatan (had RM3 000)*	2 100
Lifestyle (limited to RM2 500) *Gaya hidup (had RM2 500)*	2 500
Self-education fees (limited to RM7 000) *Yuran pengajian sendiri (had RM7 000)*	5 500

Table 1/*Jadual 1*

(a) Calculate the chargeable income of Puan Hasmah in the year 2020.
Hitung pendapatan bercukai Puan Hasmah pada tahun 2020.

[2 *marks*/*markah*]

(b) Calculate the income tax need to be paid by Puan Hasmah for that year.
Hitung cukai pendapatan yang perlu dibayar oleh Puan Hasmah pada tahun tersebut.

[5 *marks*/*markah*]

Answer/*Jawapan*:

2. Madam Chin owns a residential house in Johor Bahru. The estimated monthly rental and the property assessment tax rate of the house are RM1 200 and 8.7% respectively. Calculate the annual property assessment tax payable by Madam Chin.
Puan Chin memiliki sebuah rumah kediaman di Johor Bahru. Anggaran sewa bulanan dan kadar cukai pintu bagi rumah tersebut masing-masing ialah RM1 200 dan 8.7%. Hitung cukai pintu tahunan yang perlu dibayar oleh Puan Chin.

[2 *marks*/*markah*]

Answer/*Jawapan*:

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3. Mr. Bala has two units of houses with the area of 140 m^2 and 102 m^2 in the same housing estate. If the quit rent rate levied is RM0.51 per metre square, calculate the quit rent payable by Mr. Bala every year.
Encik Bala mempunyai dua unit rumah dengan keluasan 140 m^2 dan 102 m^2 di taman perumahan yang sama. Jika kadar cukai tanah yang dikenakan ialah RM0.51 setiap meter persegi, hitung jumlah cukai tanah yang perlu dibayar oleh Encik Bala setiap tahun.

[4 *marks*/*markah*]

Answer/*Jawapan*:

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4. Mary rented a room at a local hotel in Sri Aman, Sarawak for RM188 per night. Mary stayed at the hotel for 4 nights. Calculate the service tax to be paid by Mary if the hotel charged 6% for service tax.
Mary menyewa sebuah bilik di sebuah hotel tempatan di Sri Aman, Sarawak dengan harga RM188 semalam. Mary menginap di hotel tersebut untuk 4 malam. Hitung cukai perkhidmatan yang perlu dibayar oleh Mary jika hotel tersebut mengenakan cukai perkhidmatan sebanyak 6%.

[2 *marks*/*markah*]

Answer/*Jawapan*:

5. Table 2 shows the domestic tariff rate for Peninsular Malaysia.
Jadual 2 menunjukkan kadar tarif domestik bagi Semenanjung Malaysia.

Electric usage (kWh) *Penggunaan elektrik (kWj)*	**Tariff rate (RM)** *Kadar tarif (RM)*	**Notes** *Catatan*
1 – 200	0.218	The usage more than 600 kWh in a month will be charged with 6% of service tax. *Penggunaan melebihi 600 kWj dalam sebulan akan dikenakan cukai perkhidmatan sebanyak 6%.*
201 – 300	0.334	
301 – 600	0.516	
601 – 900	0.546	

Table 2/*Jadual 2*

If Mazlan used 750 kWh of electricity in August 2020, calculate the service tax in the electricity bill of that month.
Jika Mazlan telah menggunakan sebanyak 750 kWj elektrik pada bulan Ogos 2020, hitung cukai perkhidmatan dalam bil elektrik bulan tersebut.

[3 *marks*/*markah*]

Answer/*Jawapan*:

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6. Alex has a residential house in a housing estate. Given the property assessment tax rate of the house is 4.5% and he paid the property assessment tax of RM729 each year. Calculate the estimated monthly rental of the house.
Alex memiliki sebuah rumah kediaman di sebuah taman perumahan. Diberi kadar cukai pintu bagi rumah tersebut ialah 4.5% dan dia membayar cukai pintu sebanyak RM729 untuk setiap tahun. Hitung anggaran sewa bulanan rumah tersebut.

[4 *marks*/*markah*]

Answer/*Jawapan*:

7. Siti received an annual income of RM68 800 in the year 2020. She claimed the tax relief for individual for RM9 000, life insurance and EPF for RM5 800, lifestyle for RM2 500, medical insurance for RM1 400 and her mother's medical expenses for RM1 200. Siti donated RM500 to a government-approved welfare oraganisation and paid zakat of RM400 for that year.

Siti mendapat pendapatan tahunan sebanyak RM68 800 pada tahun 2020. Dia menuntut pelepasan cukai bagi individu sebanyak RM9 000, insurans hayat dan KWSP sebanyak RM5 800, gaya hidup sebanyak RM2 500, insurans perubatan sebanyak RM1 400 dan perbelanjaan rawatan perubatan ibu sebanyak RM1 200. Siti telah mendermakan RM500 kepada sebuah badan kebajikan yang diluluskan oleh kerajaan dan membayar zakat sebanyak RM400 pada tahun tersebut.

(a) Calculate Siti's chargeable income.
Hitung pendapatan bercukai Siti.

[3 *marks*/*markah*]

(b) Calculate the income tax payable by Siti.
Hitung cukai pendapatan yang perlu dibayar oleh Siti.

[4 *marks*/*markah*]

(c) If Siti's salary is deducted of RM250 for PCB monthly, determine whether Siti will receive returns of excess income tax payment.
Jika gaji Siti ditolak sebanyak RM250 untuk PCB setiap bulan, tentukan sama ada Siti akan menerima pulangan lebihan bayaran cukai pendapatan.

[3 *marks*/*markah*]

Answer/*Jawapan*:

1. (a) Transformation **T** is a translation $\begin{pmatrix} -4 \\ -3 \end{pmatrix}$ and transformation **P** is a reflection in the line $y = 5$.

Determine the image of the point (11, 7) under the following transformation:

Transformasi **T** *ialah translasi* $\begin{pmatrix} -4 \\ -3 \end{pmatrix}$ *dan transformasi* **P** *ialah pantulan pada garis* $y = 5$.

Tentukan imej bagi titik (11, 7) di bawah transformasi yang berikut:

(i) **T**

(ii) **TP**

[3 *marks*/*markah*]

(b) Diagram 1 shows three quadrilaterals, *JKLM*, *PQRS* and *TURV* drawn on a Cartesian plane.
Rajah 1 menunjukkan tiga sisi empat, JKLM, PQRS dan TURV dilukis pada suatu satah Cartes.

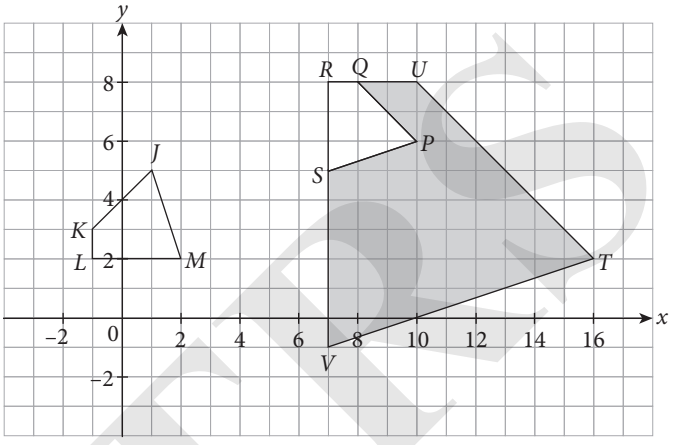

Diagram 1/***Rajah 1***

(i) *TURV* is the image of *JKLM* under the transformation **YX**. Describe in full,
TURV ialah imej bagi JKLM di bawah suatu transformasi **YX**. *Huraikan selengkapnya,*

(a) the transformation **X**
transformasi **X**

(b) the transformation **Y**
transformasi **Y**

[6 *marks*/*markah*]

(ii) Given the area of *JKLM* is 40 cm², calculate the area, in cm², of the shaded region.
Diberi luas JKLM ialah 40 cm², hitung luas, dalam cm², rantau berlorek.

[3 *marks*/*markah*]

Answer/*Jawapan*:

2. (a) Transformation **T** is a translation $\begin{pmatrix} -5 \\ 4 \end{pmatrix}$ and transformation **P** is a reflection in the line $x = -7$.

Find the image of point (–3, 4) under the following transformation:

Transformasi **T** *ialah translasi* $\begin{pmatrix} -5 \\ 4 \end{pmatrix}$ *dan transformasi* **P** *ialah pantulan pada garis* $x = -7$.

Cari imej bagi titik (–3, 4) di bawah transformasi yang berikut:

(i) **P**

(ii) **PT**

[3 *marks*/*markah*]

(b) Diagram 2 shows three quadrilaterals, *JKLM*, *PQRS* and *TUVW* drawn on a Cartesian plane.
Rajah 2 menunjukkan tiga sisi empat, JKLM, PQRS dan TUVW dilukis pada suatu satah Cartes.

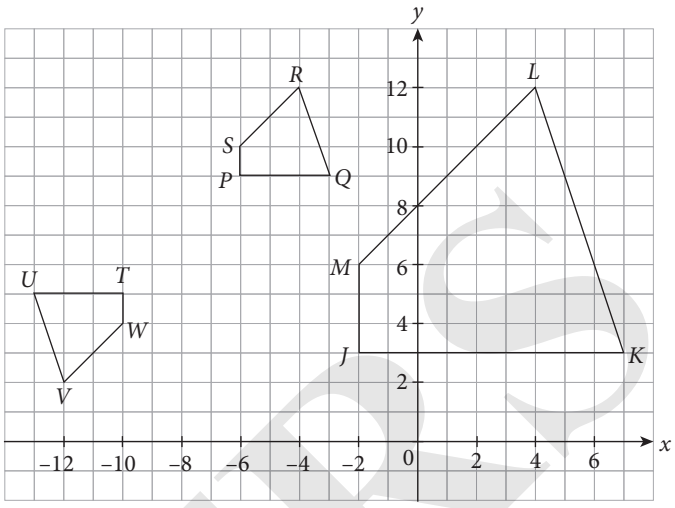

Diagram 2/***Rajah 2***

(i) *TUVW* is the image of *JKLM* under the transformation **YX**. Describe in full,
TUVW ialah imej bagi JKLM di bawah suatu transformasi **YX**. *Huraikan selengkapnya,*

(a) the transformation **X**
transformasi **X**

(b) the transformation **Y**
transformasi **Y**

[6 *marks*/*markah*]

(ii) Given the area of *JKLM* is 315 cm^2, calculate the area, in cm^2, of *TUVW*.
Diberi luas JKLM ialah 315 cm^2, hitung luas, dalam cm^2, bagi TUVW.

[3 *marks*/*markah*]

Answer/*Jawapan*:

3. Diagram 3 shows three quadrilaterals, *DEFG*, *JKLM* and *PQRS* drawn on a Cartesian plane.
Rajah 3 menunjukkan tiga sisi empat, DEFG, JKLM dan PQRS dilukis pada suatu satah Cartes.

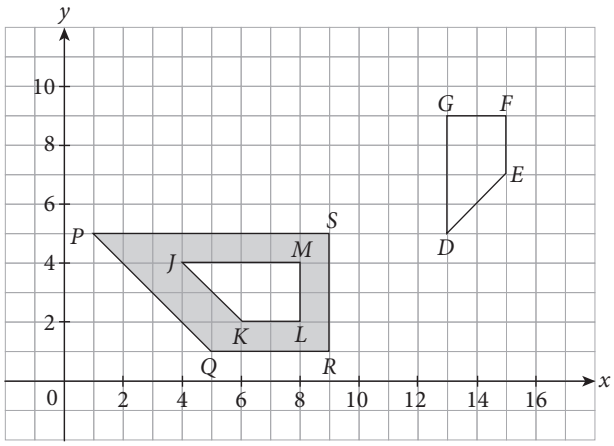

Diagram 3/*Rajah 3*

(a) Transformation **T** is a translation $\begin{pmatrix} -6 \\ 3 \end{pmatrix}$ and transformation **P** is a reflection in the line $x = 10$.

Find the coordinates of the image
Transformasi **T** *ialah translasi* $\begin{pmatrix} -6 \\ 3 \end{pmatrix}$ *dan transformasi* **P** *ialah pantulan pada garis* $x = 10$.

Cari koordinat imej

(i) of point *D* under the transformation **P**,
bagi titik D di bawah penjelmaan **P**,

(ii) of point *R* under the translation $\mathbf{T}^2$.
bagi titik R di bawah penjelmaan $\mathbf{T}^2$.

[3 *marks*/*markah*]

(b) *JKLM* is the image of *DEFG* under the transformation **U** and *PQRS* is the image of *JKLM* under the transformation **V**. Describe in full,
JKLM ialah imej bagi DEFG di bawah transformasi **U** *dan PQRS ialah imej bagi JKLM di bawah transformasi* **V**. *Huraikan selengkapnya,*

(i) the transformation **U**
transformasi **U**

(ii) the transformation **V**
transformasi **V**

[6 *marks*/*markah*]

(c) Given the area of the shaded region is 108 cm^2, calculate the area, in cm^2, of *DEFG*.
Diberi luas rantau berlorek ialah 108 cm^2, *hitung luas, dalam* cm^2, *bagi DEFG.*

[3 *marks*/*markah*]

Answer/*Jawapan*:

4. (a) Transformation **T** is a translation $\begin{pmatrix} 3 \\ -2 \end{pmatrix}$. Transformation **R** is a reflection in the line $y = x$.

State the coordinates of the image of point (1, 5) under each of the following transformations:

Transformasi **T** *ialah translasi* $\begin{pmatrix} 3 \\ -2 \end{pmatrix}$. *Transformasi* **R** *ialah pantulan pada garis* $y = x$.

Nyatakan koordinat imej bagi titik (1, 5) di bawah setiap transformasi yang berikut:

(i) **T**

(ii) **TR**

[3 *marks*/*markah*]

(b) Diagram 4 shows three polygons, *FGHJK*, *LMNPQ* and *LRSTU* drawn on a Cartesian plane.
Rajah 4 menunjukkan tiga poligon, FGHJK, LMNPQ dan LRSTU dilukis pada suatu satah Cartes.

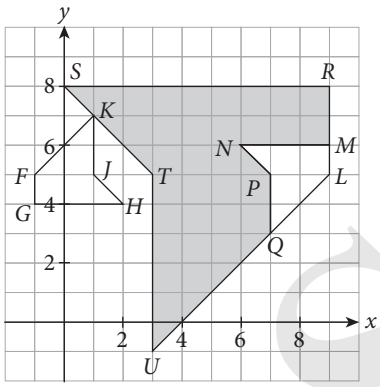

Diagram 4/*Rajah 4*

(i) Polygon *LRSTU* is the image of polygon *FGHJK* under the combined transformation **YX**. Describe in full,
Poligon LRSTU ialah imej bagi poligon FGHJK di bawah gabungan transformasi **YX**. *Huraikan selengkapnya,*

(a) the transformation **X**
transformasi **X**

(b) the transformation **Y**
transformasi **Y**

[6 *marks*/*markah*]

(c) Given the area of *FGHJK* is 25 cm^2, calculate the area, in cm^2, of the shaded area.
Diberi luas FGHJK ialah 25 cm^2, hitung luas, dalam cm^2, kawasan berlorek.

[3 *marks*/*markah*]

Answer/*Jawapan*:

FORM 5

5. (a) Transformation **T** is a translation $\begin{pmatrix} -2 \\ -3 \end{pmatrix}$. Transformation **R** is a reflection in the line $y = 3$.

State the coordinates of the image of point (9, 4) under each of the following transformations:

Transformasi **T** *ialah translasi* $\begin{pmatrix} -2 \\ -3 \end{pmatrix}$. *Transformasi* **R** *ialah pantulan pada garis* $y = 3$.

Nyatakan koordinat imej bagi titik (9, 4) di bawah setiap transformasi yang berikut:

(i) **R**

(ii) **RT**

[3 *marks*/*markah*]

(b) Diagram 5 shows three polygons, *FGHJK*, *LMNPQ* and *LRSTU* drawn on a Cartesian plane.
Rajah 5 menunjukkan tiga poligon, FGHJK, LMNPQ dan LRSTU dilukis pada suatu satah Cartes.

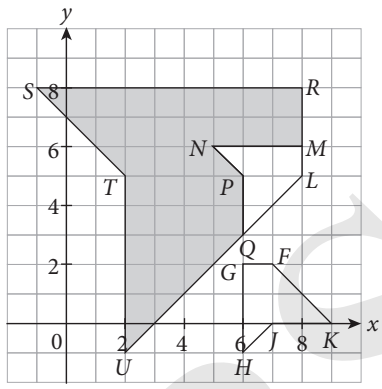

Diagram 5/***Rajah 5***

(i) Polygon *FGHJK* is the image of polygon *LRSTU* under the combined transformation **YX**.
Describe in full,
Poligon FGHJK ialah imej bagi poligon LRSTU di bawah gabungan transformasi **YX**.
Huraikan selengkapnya,

(a) the transformation **X**
penjelmaan **X**

(b) the transformation **Y**
penjelmaan **Y**

[6 *marks*/*markah*]

(c) Given the area of *LRSTU* is 360 cm^2, calculate the area, in cm^2, of the shaded area.
Diberi luas LRSTU ialah 360 cm^2, hitung luas, dalam cm^2, kawasan berlorek.

[3 *marks*/*markah*]

Answer/*Jawapan*:

6. (a) Transformation **T** is a translation $\begin{pmatrix} 2 \\ -5 \end{pmatrix}$. Transformation **R** is a 180° rotation at point (4, 6).

State the coordinates of the image of point (1, 7) under each of the following transformations:

Transformasi **T** *ialah translasi* $\begin{pmatrix} 2 \\ -5 \end{pmatrix}$. *Transformasi* **R** *ialah putaran 180° pada titik (4, 6).*

Nyatakan koordinat imej bagi titik (1, 7) di bawah setiap transformasi yang berikut:

(i) **T**

(ii) **TR**

[3 *marks*/*markah*]

(b) Diagram 6 shows three pentagons, *DEFGH*, *JKLMN* and *PQRST* drawn on a Cartesian plane.
Rajah 6 menunjukkan tiga pentagon, DEFGH, JKLMN dan PQRST dilukis pada suatu satah Cartes.

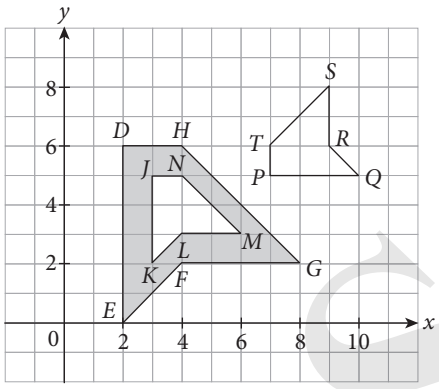

Diagram 6/***Rajah 6***

(i) Pentagon *JKLMN* is the image of pentagon *DEFGH* under transformation **X** and pentagon *PQRST* is the image of pentagon *JKLMN* under the transformation **Y**.
Describe in full,
Pentagon JKLMN ialah imej bagi pentagon DEFGH di bawah transformasi **X** *dan pentagon PQRST ialah imej bagi pentagon JKLMN di bawah transformasi* **Y**.
Huraikan selengkapnya,

(a) the transformation **X**
transformasi **X**

(b) the transformation **Y**
transformasi **Y**

[6 *marks*/*markah*]

(c) Given the area of *PQRST* is 35 cm^2, calculate the area, in cm^2, of the shaded region.
Diberi luas PQRST ialah 35 cm^2, hitung luas, dalam cm^2, rantau berlorek.

[3 *marks*/*markah*]

Answer/*Jawapan*:

FORM 5

7. Diagram 7 shows three pentagons, *DEFGH*, *FJKLM* and *PQRST* drawn on a Cartesian plane.
Rajah 7 menunjukkan tiga pentagon, DEFGH, FJKLM dan PQRST dilukis pada suatu satah Cartes.

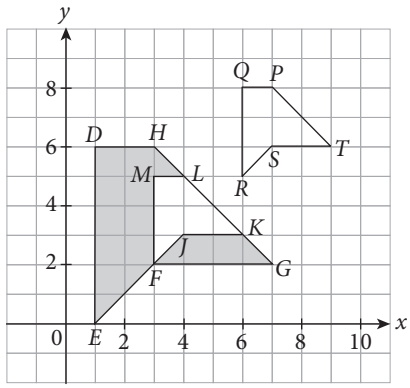

Diagram 7/*Rajah 7*

(a) Transformation **X** is a 90° anticlockwise rotation at point (4, 3) and transformation **Y** is a reflection in the line $x = 3$. State the coordinates of the image of point *R* under each of the following transformations:
Transformasi **X** *ialah putaran 90° lawan arah jam pada titik (4, 3) dan transformasi* **Y** *ialah pantulan pada garis x = 3. Nyatakan koordinat imej bagi titik R di bawah setiap transformasi yang berikut:*
(i) **XY**
(ii) $\mathbf{X}^2$

[3 *marks*/*markah*]

(b) Pentagon *DEFGH* is the image of *PQRST* under the transformation **X** followed by transformation **Y**. Describe in full,
Pentagon DEFGH ialah imej bagi PQRST di bawah gabungan transformasi **X** *diikuti transformasi* **Y**. *Huraikan selengkapnya,*
(i) the transformation **X**
transformasi **X**
(ii) the transformation **Y**
transformasi **Y**

[6 *marks*/*markah*]

(c) Given the area of region *PQRST* is 50 cm^2, calculate the area, in cm^2, of the shaded region.
Diberi luas rantau PQRST ialah 50 cm^2, hitung luas, dalam cm^2, rantau berlorek.

[3 *marks*/*markah*]

Answer/*Jawapan*:

8. (a) Transformation **T** is a translation $\begin{pmatrix} -5 \\ -4 \end{pmatrix}$, transformation **P** is a reflection at $y = 4$ and transformation **R** is a 180° rotation at point (4, 4).
State the coordinates of the image of point (6, 2) under each of the following transformations:
Transformasi **T** *ialah translasi* $\begin{pmatrix} -5 \\ -4 \end{pmatrix}$, *transformasi* **P** *ialah pantulan pada* $y = 4$ *dan transformasi* **R** *ialah putaran 180° pada titik (4, 4).*
Nyatakan koordinat imej bagi titik (6, 2) di bawah setiap transformasi yang berikut:
(i) **R**
(ii) **TP**

[3 *marks*/*markah*]

(b) Diagram 8 shows two pentagons, *DEFGH* and *JKLMN* drawn on a Cartesian plane.
Rajah 8 menunjukkan dua pentagon, DEFGH dan JKLMN dilukis pada suatu satah Cartes.

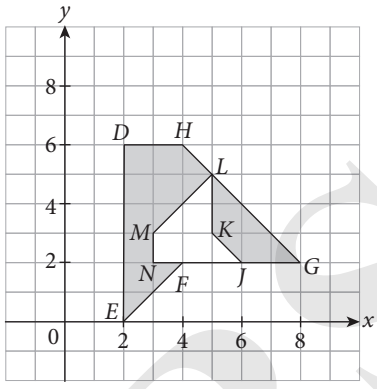

Diagram 8/***Rajah 8***

(i) *DEFGH* is the image of *JKLMN* under the transformation **YX**. Describe in full,
DEFGH ialah imej bagi JKLMN di bawah transformasi **YX**. *Huraikan selengkapnya,*
(a) the transformation **X**
transformasi **X**
(b) the transformation **Y**
transformasi **Y**

[6 *marks*/*markah*]

(ii) Given the area of *DEFGH* is 60 cm^2, calculate the area, in cm^2, of the shaded region.
Diberi luas DEFGH ialah 60 cm^2, hitung luas, dalam cm^2, rantau berlorek.

[3 *marks*/*markah*]

Answer/*Jawapan*:

FORM 5

9. (a) Transformation **T** is a translation $\begin{pmatrix} -2 \\ -4 \end{pmatrix}$. Transformation **R** is a reflection in the line $y = 3$.

State the coordinates of the image of point (8, 5) under each of the following transformations:

Transformasi **T** *ialah translasi* $\begin{pmatrix} -2 \\ -4 \end{pmatrix}$. *Transformasi* **R** *ialah pantulan pada garis* $y = 3$.

Nyatakan koordinat imej bagi titik (8, 5) di bawah setiap transformasi yang berikut:

(i) **R**

(ii) **RT**

[3 *marks*/*markah*]

(b) Diagram 9 shows three pentagons, *DEFGH*, *JKLMN* and *PQRSH* drawn on a Cartesian plane.
Rajah 9 menunjukkan tiga pentagon, DEFGH, JKLMN dan PQRSH dilukis pada suatu satah Cartes.

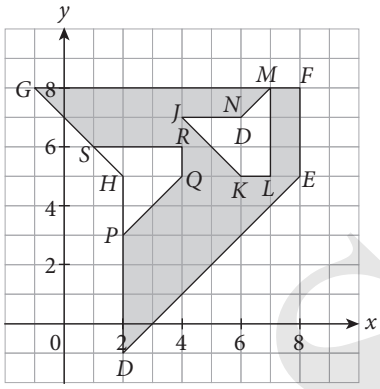

Diagram 9/***Rajah 9***

(i) *JKLMN* is the image of *DEFGH* under the combined transformation **YX**. Describe in full,
JKLMN ialah imej bagi DEFGH di bawah gabungan transformasi **YX**. *Huraikan selengkapnya,*

(a) the transformation **X**
transformasi **X**

(b) the transformation **Y**
transformasi **Y**

[6 *marks*/*markah*]

(ii) Given the area of *PQRSH* is 27 cm^2, calculate the area, in cm^2, of the shaded area.
Diberi luas PQRSH ialah 27 cm^2, hitung luas, dalam cm^2, kawasan berlorek.

[3 *marks*/*markah*]

Answer/*Jawapan*:

1. Determine the value for each of the following based on their respective corresponding reference angles.
Tentukan nilai bagi setiap yang berikut berdasarkan sudut rujukan sepadan masing-masing.
(a) sin 122°
(b) cos/*kos* 96° 54′
(c) tan 222°

[6 *marks*/*markah*]

Answer/*Jawapan*:

2. If $\sin\theta = \frac{\sqrt{3}}{2}$, determine the value of θ without using a calculator.
Jika $\sin\theta = \frac{\sqrt{3}}{2}$, *tentukan nilai bagi θ tanpa menggunakan kalkulator.*

[2 *marks*/*markah*]

Answer/*Jawapan*:

3. Given sin θ = –0.8660 and 0° ⩽ θ ⩽ 360°, find all the possible values of θ.
Diberi sin θ = –0.8660 dan 0° ⩽ θ ⩽ 360°, cari semua nilai yang mungkin bagi θ.

[3 *marks*/*markah*]

Answer/*Jawapan*:

4. Sketch a graph of $y = 1 + 2 \sin x$ for $0° \leqslant \theta \leqslant 360°$.
Lakarkan graf bagi $y = 1 + 2 \sin x$ untuk $0° \leqslant \theta \leqslant 360°$.

[3 *marks*/*markah*]

Answer/*Jawapan*:

---

5. Find the value of cos 218°.
Cari nilai kos 218°.

[3 *marks*/*markah*]

Answer/*Jawapan*:

---

6. In Diagram 1, *KLM* is a straight line.
Dalam Rajah 1, KLM ialah garis lurus.

Given $\sin p = \frac{3}{5}$, find $\tan q$.

Diberi $\sin p = \frac{3}{5}$, cari $\tan q$.

[3 *marks*/*markah*]

Answer/*Jawapan*:

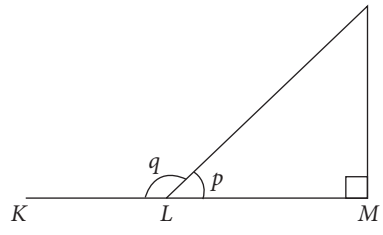

Diagram 1/*Rajah 1*

7. Diagram 2 shows the graph $y = \sin x$.
Rajah 2 menunjukkan graf $y = \sin x$.

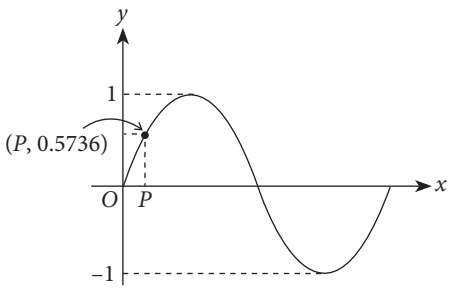

Diagram 2/*Rajah 2*

Find the value of cos P.
Cari nilai kos P.

[3 *marks*/*markah*]

Answer/*Jawapan*:

FORM 5

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8. Diagram 3 shows an iron ladder with a length of 8 m leaning against an upright wall. The horizontal distance from the wall to the iron ladder is 6 m. Calculate the value of sin θ.
Rajah 3 menunjukkan tangga besi dengan panjang 8 m disandarkan pada dinding tegak. Jarak mengufuk dari dinding ke tangga besi itu ialah 6 m. Hitung nilai sin θ.

[4 *marks*/*markah*]

Answer/*Jawapan*:

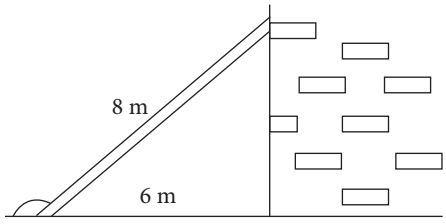

Diagram 3/*Rajah 3*

9. Diagram 4 shows two right angled-triangles, *OBC* and *ABD*. *OAB* is a straight line and $AD = OC = 6$ cm. Calculate the value of x.
Rajah 4 menunjukkan dua segi tiga bersudut tegak, OBC dan ABD. OAB ialah garis lurus dan AD = OC = 6 cm. Hitung nilai x.

[4 *marks*/*markah*]

Answer/*Jawapan*:

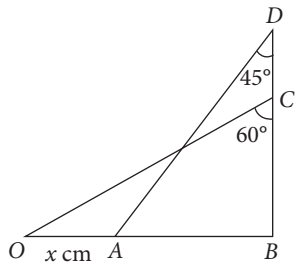

Diagram 4/***Rajah 4***

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10. Diagram 5 shows the view of a ship to a lighthouse. The distance of the ship to the lighthouse is 50 m. Write a trigonometric function that expresses the height of the lighthouse, s, in m, in terms of x.
Rajah 5 menunjukkan pandangan sebuah kapal ke rumah api. Jarak kapal dengan rumpah api itu ialah 50 m. Tulis satu fungsi trigonometri yang mengungkapkan ketinggian rumah api, s, dalam m, dalam sebutan x.

[2 *marks*/*markah*]

Answer/*Jawapan*:

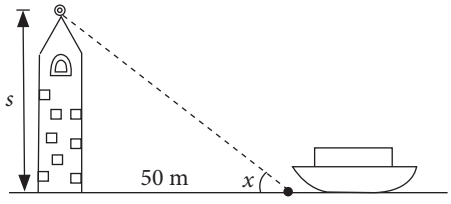


Diagram 5/***Rajah 5***

Video PdPR

1. The data in Diagram 1 shows the age, in years, of 45 tourists to Japan.
Data dalam Rajah 1 menunjukkan umur, dalam tahun, bagi 45 orang pelancong ke Jepun.

52	41	43	39	38	38	26	25	24
20	30	24	26	34	31	35	47	54
46	26	37	39	43	35	23	43	31
33	33	49	36	38	42	42	28	48
27	38	45	22	28	53	34	22	33

Diagram 1/*Rajah 1*

(a) Using the data in Diagram 1, complete the frequency table in the answer space.
Menggunakan data dalam Rajah 1, lengkapkan jadual kekerapan pada ruang jawapan.

[4 *marks*/*markah*]

(b) Based on the frequency table in (a),
Berdasarkan jadual kekerapan di (a),
(i) state the modal class,
nyatakan kelas mod,
(ii) calculate the mean age, in years, for a tourist.
hitung min umur, dalam tahun, bagi seorang pelancong.

[4 *marks*/*markah*]

(c) Using a scale of 2 cm to 5 years on the x-axis and 2 cm to one tourist on the y-axis, draw a histogram of the data on the graph paper on page 100.
Menggunakan skala 2 cm kepada 5 tahun pada paksi-x dan 2 cm kepada seorang pelancong pada paksi-y, lukis histogram bagi data itu pada kertas graf dalam halaman 100.

[4 *marks*/*markah*]

Answer/*Jawapan*:

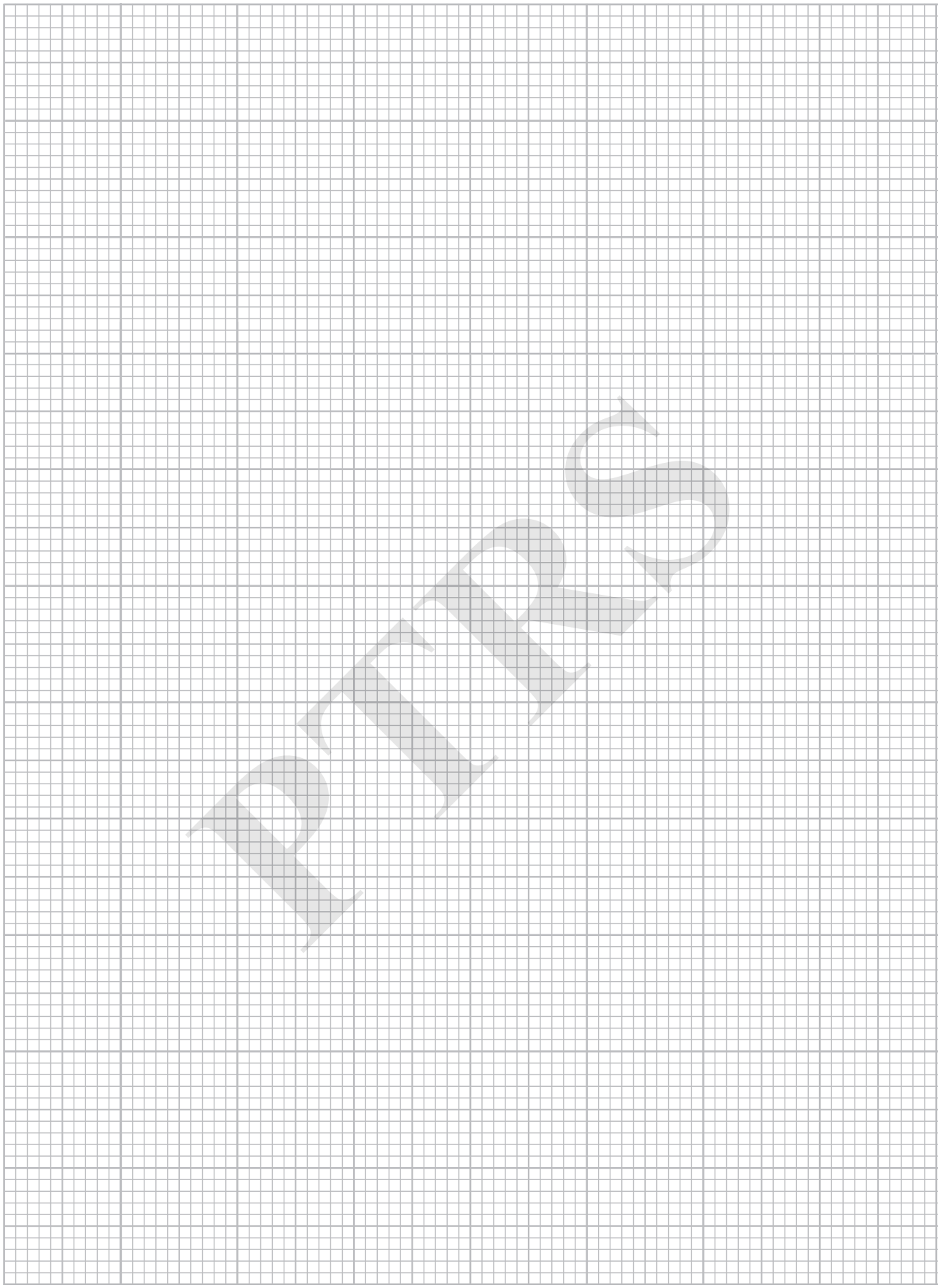
(a)

Age (years) ***Umur (tahun)***	**Midpoint** ***Titik tengah***	**Frequency** ***Kekerapan***
20 – 24		
25 – 29		

(b) (i)

(ii)

(c)



2. The data in Diagram 2 shows the number of goals scored by 40 teams in the 2021 Merdeka Futsal Championship.
Data dalam Rajah 2 menunjukkan bilangan gol yang dijaringkan oleh 40 pasukan dalam Kejohanan Futsal Merdeka 2021.

43	28	31	37	35	49	22	40	28	27
45	29	39	35	38	26	37	34	30	24
48	39	41	33	39	45	32	40	43	32
43	40	23	44	25	34	46	48	25	37

Diagram 2/*Rajah 2*

(a) Using the data in Diagram 2, complete the frequency table in the answer space.
Menggunakan data dalam Rajah 2, lengkapkan jadual kekerapan pada ruang jawapan.

[4 *marks*/*markah*]

(b) Based on the frequency table in (a), calculate the mean goal scored by a team.
Berdasarkan jadual kekerapan di (a), hitung min jaringan gol bagi sebuah pasukan.

[3 *marks*/*markah*]

(c) Using a scale of 2 cm to 5 goals on the horizontal axis and 2 cm to a team on the vertical axis, draw a frequency polygon for the data on the graph paper on page 102.
Menggunakan skala 2 cm kepada 5 gol pada paksi mengufuk dan 2 cm kepada sebuah pasukan pada paksi mencancang, lukis poligon kekerapan bagi data itu pada kertas graf dalam halaman 102.

[4 *marks*/*markah*]

(d) From the frequency polygon in (c), state the number of teams scoring more than 40 goals.
Daripada poligon kekerapan di (c), nyatakan bilangan pasukan yang menjaringkan lebih daripada 40 gol.

[1 *mark*/*markah*]

Answer/*Jawapan*:

(a)

Number of goals scored ***Bilangan jaringan gol***	**Midpoint** ***Titik tengah***	**Frequency** ***Kekerapan***
21 – 25		
26 – 30		

(b)

(d)

FORM 5

(c)

3. The data in Diagram 3 shows the age, in years, of 40 archery participants in a tournament of Gombak district level.
Data dalam Rajah 3 menunjukkan umur, dalam tahun, bagi 40 orang peserta memanah bagi suatu kejohanan peringkat daerah Gombak.

17	11	17	18	18	8	10	13	7	23
16	17	18	18	15	23	17	21	14	24
18	20	11	17	20	19	23	12	16	13
2	14	12	3	28	22	14	19	6	16

Diagram 3/*Rajah 3*

(a) Using the above data, complete the frequency table in the answer space.
Menggunakan data di atas, lengkapkan jadual kekerapan pada ruang jawapan.

[4 *marks*/*markah*]

(b) Based on the frequency table in (a), state the modal class.
Berdasarkan jadual kekerapan di (a), nyatakan kelas mod.

[1 *mark*/*markah*]

(c) Using a scale of 2 cm to 4 years on the horizontal axis and 2 cm to 5 participants on the vertical axis, draw an ogive for the data on the graph paper on page 104.
Menggunakan skala 2 cm kepada 4 tahun pada paksi mengufuk dan 2 cm kepada 5 peserta pada paksi mencancang, lukis ogif bagi data itu pada kertas graf dalam halaman 104.

[4 *marks*/*markah*]

(d) From the ogive,
Daripada ogif,
(i) state the third quartile,
nyatakan kuartil ketiga,
(ii) if participants over the age of 20 have the potential to be the champion in this competition, state the number of participants who have the potential to be the champion of this competition.
jika peserta yang berumur lebih daripada 20 tahun berpotensi untuk muncul sebagai juara dalam pertandingan ini, nyatakan bilangan peserta yang berpotensi untuk muncul sebagai juara pertandingan ini.

[3 *marks*/*markah*]

Answer/*Jawapan*:

(a)

Age (years) ***Umur (tahun)***	**Frequency** ***Kekerapan***	**Upper boundary** ***Sempadan atas***	**Cumulative frequency** ***Kekerapan longgokan***
1 – 4			
5 – 8			

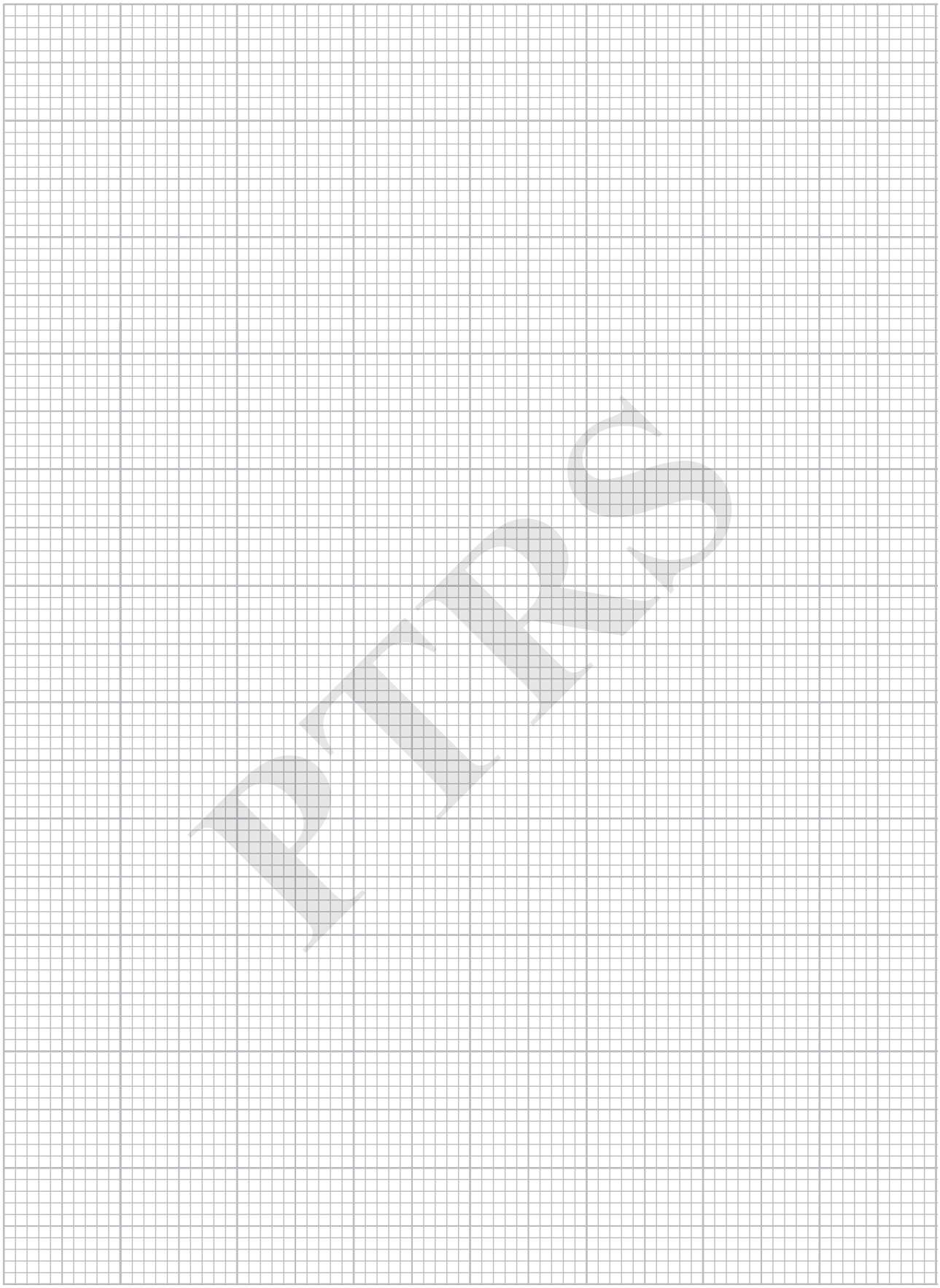
(b)

(d) (i)

(ii)

FORM 5

(c)



4. The data in Diagram 4 shows the age, in years, of 40 Singaporean express bus passengers visiting Kuala Lumpur.
Data dalam Rajah 4 menunjukkan umur, dalam tahun, bagi 40 orang penumpang bas ekspres warga Singapura yang membuat lawatan ke Kuala Lumpur.

64	54	58	65	54	48	61	42
67	43	47	62	59	58	75	69
57	48	69	46	64	43	48	52
46	57	55	57	61	60	75	73
59	68	64	54	50	51	63	59

Diagram 4/*Rajah 4*

(a) Based on the data in Diagram 4, complete the frequency table in the answer space.
Berdasarkan data dalam Rajah 4, lengkapkan jadual kekerapan pada ruang jawapan.

[4 *marks*/*markah*]

(b) Based on the frequency table in (a), calculate the mean age of a passenger in the express bus.
Berdasarkan jadual kekerapan di (a), hitung min umur bagi seorang penumpang di dalam bas ekspres itu.

[3 *marks*/*markah*]

(c) For this part of the question, use the graph paper.
Untuk ceraian soalan ini, gunakan kertas graf.
Using a scale of 2 cm to 5 years on the horizontal axis and 2 cm to a passenger on the vertical axis, draw a histogram of the data on the graph paper on page 106.
Menggunakan skala 2 cm kepada 5 tahun pada paksi mengufuk dan 2 cm kepada seorang penumpang pada paksi mencancang, lukis satu histogram bagi data tersebut pada kertas graf dalam halaman 106.

[4 *marks*/*markah*]

(d) On the graph in (c), construct a frequency polygon.
Pada graf di (c), bina poligon kekerapan.

[1 *mark*/*markah*]

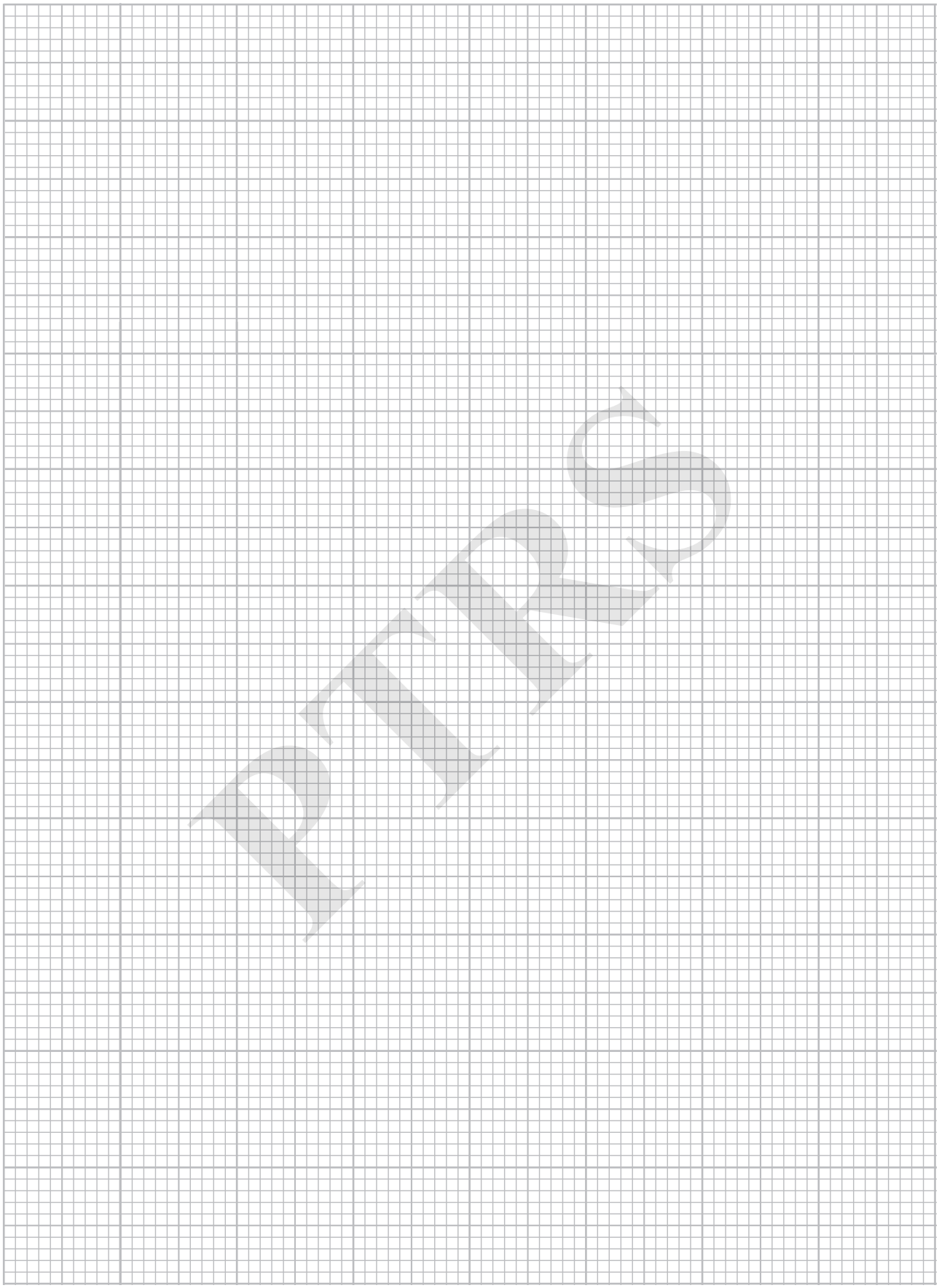
Answer/*Jawapan*:

(a)

Age (years) ***Umur (tahun)***	**Midpoint** ***Titik tengah***	**Frequency** ***Kekerapan***
41 – 45		

(b)

(c) & (d)



5. The data in Diagram 5 shows the mass, in kg, of the garbage that was successfully collected by a group of 40 participants in the "Cintai Sungai Kita" Campaign.
Data dalam Rajah 5 menunjukkan jisim, dalam kg, sampah yang berjaya dikumpul oleh sekumpulan 40 orang peserta dalam Kempen Cintai Sungai Kita.

20	52	44	45	26	33	35	40	24	34
35	44	34	53	38	45	30	36	29	27
33	46	38	39	47	37	42	35	54	40
42	36	41	43	37	49	42	33	48	54

Diagram 5/*Rajah 5*

(a) Based on the data in Diagram 5, complete the table in the answer space.
Berdasarkan data dalam Rajah 5, lengkapkan jadual pada ruang jawapan.

[4 *marks*/*markah*]

(b) Based on the table in (a), state the modal class.
Berdasarkan jadual di (a), nyatakan kelas mod.

[1 *mark*/*markah*]

(c) For this part of the question, use the graph paper.
Untuk ceraian soalan ini, gunakan kertas graf.
Using a scale of 2 cm to 5 kg on the x-axis and 2 cm to 5 participants on the y-axis, draw an ogive based on the data on the graph paper on page 108.
Dengan menggunakan skala 2 cm kepada 5 kg pada paksi-x dan 2 cm kepada 5 orang peserta pada paksi-y, lukis satu ogif berdasarkan data itu pada kertas graf dalam halaman 108.

[4 *marks*/*markah*]

(d) From the ogive, state the
Daripada ogif, nyatakan
(i) first quartile
kuartil pertama
(ii) interquartile range
julat antara kuartil

[3 *marks*/*markah*]

FORM 5

Answer/*Jawapan*:

(a)

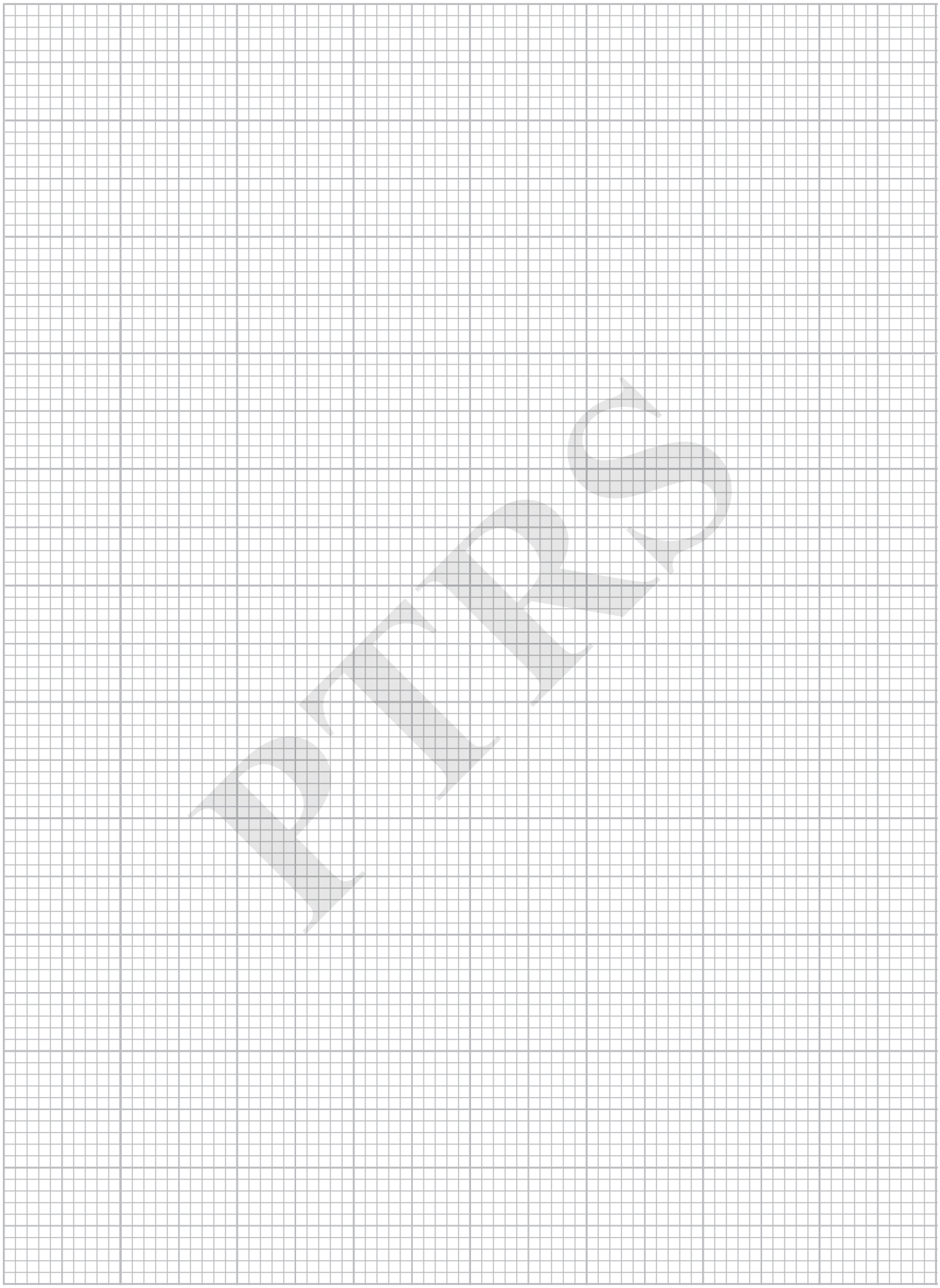
Mass (kg) ***Jisim (kg)***	**Frequency** ***Kekerapan***	**Cumulative frequency** ***Kekerapan longgokan***	**Upper boundary** ***Sempadan atas***
15 – 19			
20 – 24			

(b)

(d) (i)

(ii)

(c)



6. Diagram 6 shows an ogive that represents the mass, in kg, of 40 pupils.
Rajah 6 menunjukkan ogif yang mewakili jisim, dalam kg, bagi 40 orang murid.

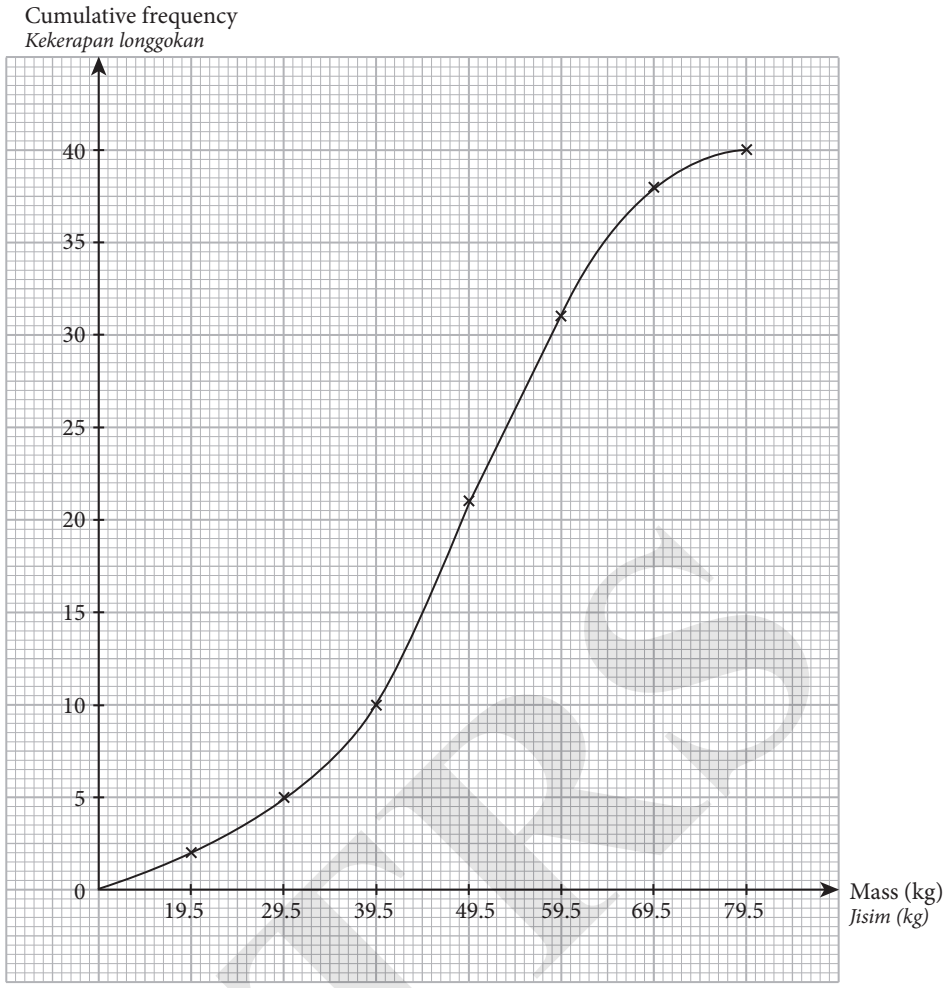


Diagram 6/*Rajah 6*

(a) Complete the frequency table in the answer space.
Lengkapkan jadual kekerapan di ruang jawapan.

[4 *marks*/*markah*]

(b) Calculate the estimated mean mass, in kg, of a pupil.
Hitung min anggaran jisim, dalam kg, bagi seorang murid.

[3 *marks*/*markah*]

(c) Using a scale of 2 cm to 10 kg on the horizontal axis and 2 cm to a pupil on the vertical axis, draw a histogram on the graph paper on page 111.
Menggunakan skala 2 cm kepada 10 kg pada paksi mengufuk dan 2 cm kepada seorang murid pada paksi mencancang, lukis histogram pada kertas graf dalam halaman 111.

[4 *marks*/*markah*]

(d) From the histogram in (c), calculate the mode of obesity.
Daripada histogram di (c), hitung mod obesiti.

[1 *mark*/*markah*]

FORM 5

Answer/*Jawapan*:

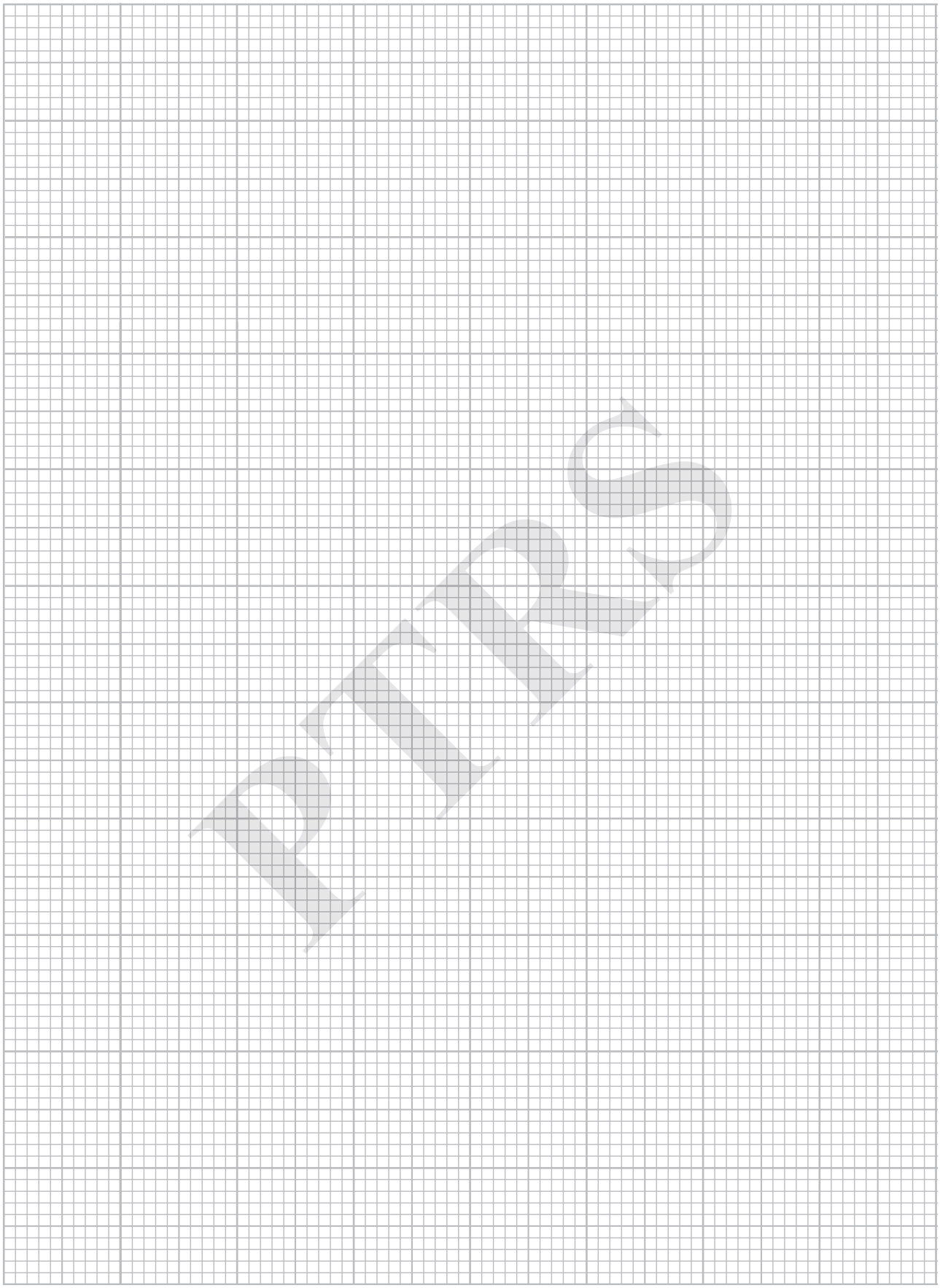
(a)

Mass (kg) *Jisim (kg)*	**Midpoint** *Titik tengah*	**Frequency** *Kekerapan*
10 – 19		
20 – 29		

(b)

(d)

(c)



7. Diagram 7 shows a frequency polygon that represents the time, in minutes, of 40 pupils doing leisure activities in a day.
Rajah 7 menunjukkan poligon kekerapan yang mewakili masa, dalam minit, bagi 40 orang murid yang melakukan riadah dalam sehari.

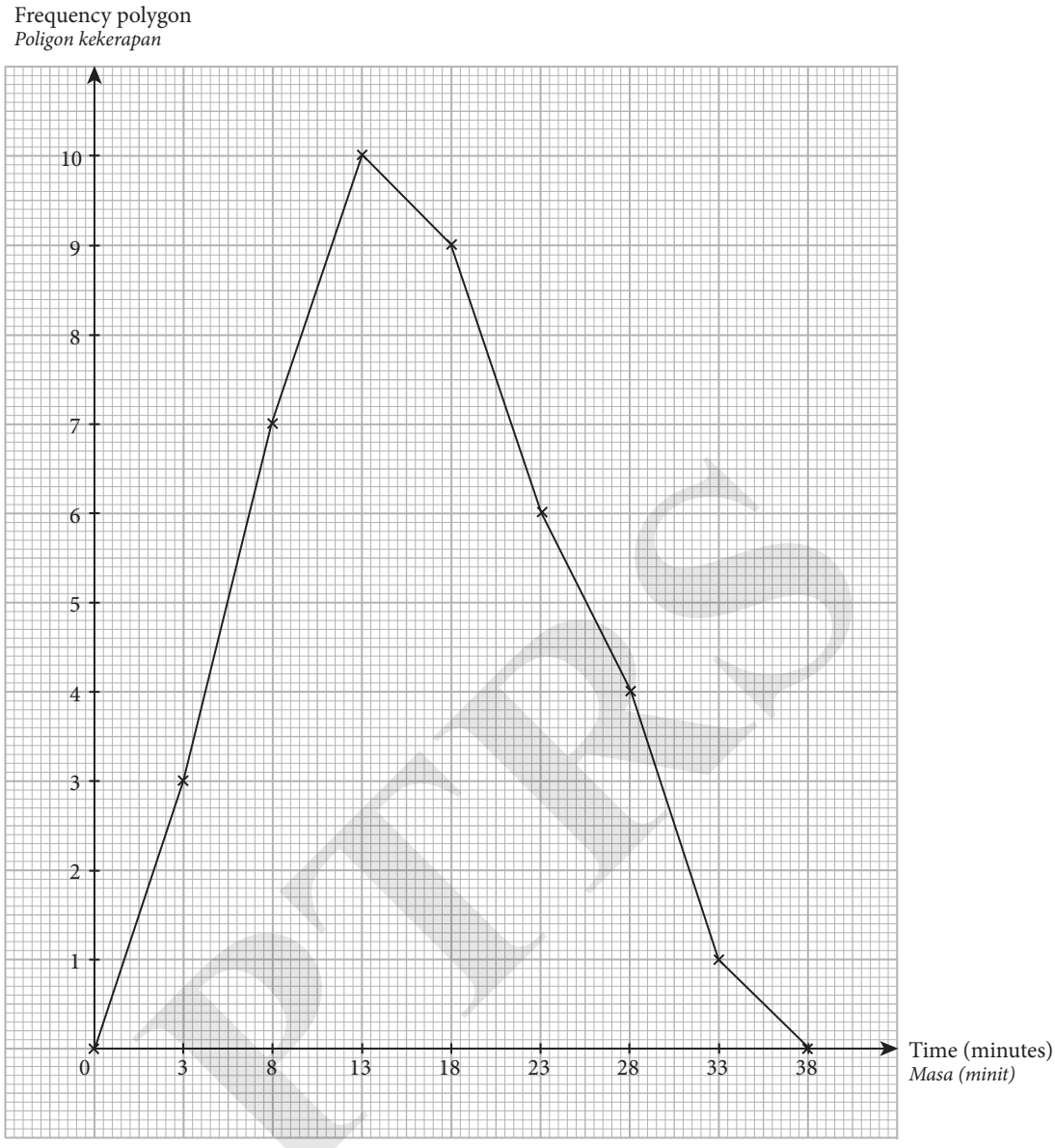


Diagram 7/*Rajah 7*

(a) Complete the frequency table in the answer space.
Lengkapkan jadual kekerapan di ruang jawapan.

[4 *marks*/*markah*]

(b) Calculate the estimated mean leisure time for a pupil, in minutes.
Hitung min anggaran masa riadah bagi seorang murid, dalam minit.

[3 *marks*/*markah*]

(c) Using a scale of 2 cm to 5 minutes on the horizontal axis and 2 cm to 5 pupils on the vertical axis, draw an ogive on the graph paper on page 114.
Menggunakan skala 2 cm kepada 5 minit pada paksi mengufuk dan 2 cm kepada 5 orang murid pada paksi mencancang, lukis ogif pada kertas graf dalam halaman 114.

[4 *marks*/*markah*]

(d) From the ogive, calculate the percentage of pupils who do leisure activities more than 20 minutes a week.
Daripada ogif, hitung peratus murid yang melakukan riadah lebih daripada 20 minit seminggu.

[1 *mark*/*markah*]

Answer/*Jawapan*:

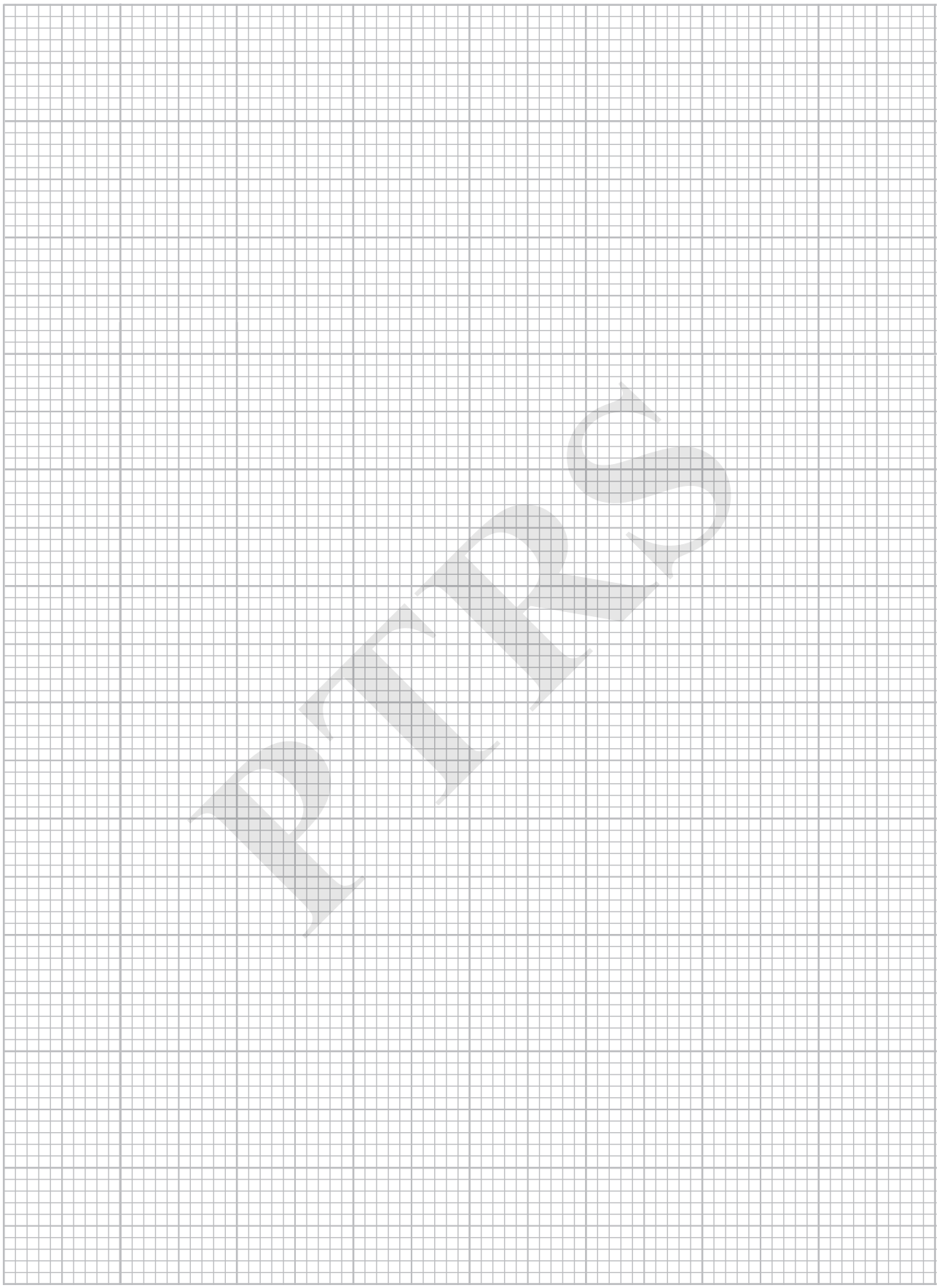
(a)

Time (minutes) *Masa (minit)*	**Frequency** *Kekerapan*	**Cumulative frequency** *Kekerapan longgokan*	**Upper boundary** *Sempadan atas*
1 – 5			
6 – 10			

(b)

(d)

(c)



Video PdPR

1. Encik Irfan bought a car by taking the car loan from a local bank. The total amount of loan taken is RM105 000 with an annual interest rate of 3.15%. If he would like to pay off his loan in a period of 9 years, how much is the monthly payment of his car loan instalment?
Encik Irfan membeli sebuah kereta dengan membuat pinjaman daripada sebuah bank tempatan. Jumlah pinjaman ialah RM105 000 dengan kadar faedah tahunan ialah 3.15%. Jika beliau ingin menyelesaikan bayaran pinjaman dalam tempoh 9 tahun, berapakah bayaran bulanan untuk pinjaman pembiayaan keretanya?

(a) Identify and define the problem in the above situation.
Kenal pasti dan definisikan masalah dalam persoalan di atas.

(b) Determine the assumptions that need to be made and identify the variables in solving the problems.
Tentukan andaian yang perlu dibuat dan kenal pasti pemboleh ubah dalam menyelesaikan masalah di atas.

[3 *marks*/*markah*]

Answer/*Jawapan*:

FORM 5

---

2. Puan Badariah's car consumes 4 litres of petrol to move for 12 km. What is the distance travelled by her car using 50 litres of petrol if it moves with the same speed?
Kereta Puan Badariah menggunakan 4 liter petrol untuk bergerak sejauh 12 km. Berapakah jarak yang dilalui oleh keretanya dengan menggunakan 50 liter petrol jika kereta itu bergerak dengan kelajuan yang sama?

(a) Identify and define the problem in the above situation.
Kenal pasti dan definisikan masalah dalam persoalan di atas.

(b) Determine the assumptions that need to be made and identify the variables in solving the problems.
Tentukan andaian yang perlu dibuat dan kenal pasti pemboleh ubah dalam menyelesaikan masalah di atas.

[3 *marks*/*markah*]

Answer/*Jawapan*:

3. In a biology experiment, Karen found out that the population of the bacteria in a substance will be tripled in every 2 hours. If the initial number of bacteria in the substance is 6 000, derive a mathematical model for the number of bacteria after *t* hours after the experiment begins. Solve the problems through mathematical modeling.
Dalam suatu eksperimen biologi, Karen mendapati bahawa populasi bakteria dalam suatu bahan akan menjadi 3 kali ganda bagi setiap tempoh 2 jam. Jika bilangan bakteria dalam bahan tersebut adalah 6 000 pada permulaannya, terbitkan satu model matematik bagi bilangan bakteria selepas t jam eksperimen ini bermula. Selesaikan masalah ini melalui pemodelan matematik.
[10 *marks*/*markah*]

Answer/*Jawapan*:

4. A tap is installed at the lowest part of the water tank that filled up with water. The tap is opened and the height of the water level in the tank at particular time is recorded as in the Table 1.
Sebuah pili dipasang pada bahagian paling bawah sebuah tangki yang diisi penuh dengan air. Pili itu kemudiannya dibuka dan ketinggian paras air dalam tangki tersebut pada masa tertentu direkodkan seperti dalam Jadual 1.

Time, *t* minutes ***Masa, t minit***	0	10	20	30	40	50
Height of water level, *h* cm ***Ketinggian air, h cm***	200	180	160	140	120	100

Table 1/*Jadual 1*

(a) Based on the table above, draw the graph of time against the height of the water level in the tank.
Berdasarkan jadual di atas, lukis graf masa melawan ketinggian air di dalam tangki.

(b) Derive a mathematical model for above situation.
Terbitkan suatu model matematik bagi situasi di atas.

(c) State a possible assumption for the above situation.
Nyatakan satu andaian yang mungkin untuk situasi di atas.

[10 *marks*/*markah*]

Answer/*Jawapan*:

FORM 5

5. The estimation value of the two different types of house model in a housing estate can be modelled as follows:
Nilai jangkaan bagi dua jenis model rumah yang berbeza di suatu taman perumahan dapat dimodelkan seperti yang berikut:

Model A: $H = 125\,000e^{0.24t}$
Model B: $H = 280\,000e^{0.12t + 1\,000}$

where H is the value of the house, t is the time in years after the house is built and e = 2.7183.
dengan keadaan H ialah nilai rumah, t ialah masa dalam tahun selepas rumah tersebut siap dibina dan e *= 2.7183.*

(a) What is the initial value of the house model type A and house model type B?
Berapakah nilai awal rumah model jenis A dan model jenis B?

(b) What is the value of house model type B after 5 years?
Berapakah nilai rumah model jenis B selepas 5 tahun?

(c) What is the difference between the value of house model type A and model type B after 6 years?
Berapakah beza nilai rumah model jenis A dan model jenis B selepas 6 tahun?

[10 *marks*/*markah*]

Answer/*Jawapan*:

ASSESSMENT 1

Section A/*Bahagian A*
[40 marks/*markah*]

Answer **all** *questions.*
Jawab ***semua*** *soalan.*

1. The data in Table 1 shows the estimated income for Syarikat Emas Padu Sdn. Bhd. for April in a certain year.
Data dalam Jadual 1 menunjukkan anggaran pendapatan bagi Syarikat Emas Padu Sdn. Bhd. bagi bulan April dalam tahun tertentu.

Item *Perkara*	**Stock (gram)** *Stok (gram)*	**RM**	**RM**
Income as of 1st April 2020 *Pendapatan pada 1 April 2020*	–	–	78 620.62
Gold sales throughout April 2020 *Jualan emas sepanjang April 2020*	89	19 551.52	–
Stock purchases throughout April 2020 *Belian stok sepanjang April 2020*	150	*X*	–
Balance as of 30th April 2020 *Baki pada 30 April 2020*	518	–	*Y*

Table 1/*Jadual 1*

(a) Given the selling and buying prices of gold for every 1 gram of gold for that month is RM219.68 and RM184.75 respectively, calculate the value of *X*.
Diberi harga jualan dan belian emas bagi setiap 1 gram emas untuk bulan tersebut masing-masing ialah RM219.68 dan RM184.75, hitung nilai X.

[2 *marks*/*markah*]

(b) Calculate the value of *Y* and express it in the standard form, correct to three significant figures.
Hitung nilai Y dan ungkapkan dalam bentuk piawai betul kepada tiga angka bererti.

[2 *marks*/*markah*]

Answer/*Jawapan*:
(a)

(b)

2. Diagram 1 is a dot plot showing the age distribution for a group of students visiting the Taiping Zoo & Night Safari.
Rajah 1 ialah plot titik yang menunjukkan taburan umur bagi sekumpulan murid yang melawat ke Zoo Taiping & Night Safari.

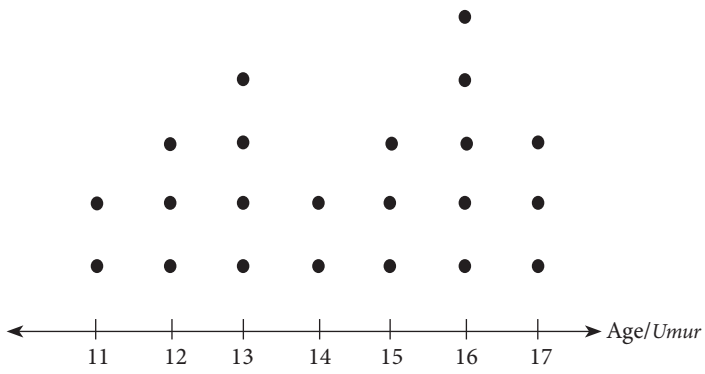


Diagram 1/*Rajah 1*

(a) Calculate the number of students who are 15 years old at most.
Hitung bilangan murid yang berumur selebih-lebihnya 15 tahun.

[1 *mark*/*markah*]

(b) Calculate the mean age of the students participating in the visit.
Hitung min umur murid yang menyertai lawatan itu.

[2 *marks*/*markah*]

Answer/*Jawapan*:
(a)

(b)

---

3. Given $7546_8 = 41403_5 + Q_6$, find the value of Q.
Diberi $7546_8 = 41403_5 + Q_6$, cari nilai Q.

[4 *marks*/*markah*]

Answer/*Jawapan*:

4. Given the price for 1 kg of durian is RM($4x + 7$). Salwa bought ($2x - 3$) kg and paid a total of RM189. Calculate the price, in RM, for 1 kg of durian bought by Salwa.
Diberi harga bagi 1 kg durian ialah RM(4x + 7). Salwa membeli (2x – 3) kg dan membayar sejumlah RM189. Hitung harga, dalam RM, bagi 1 kg durian yang dibeli oleh Salwa.

[4 *marks*/*markah*]

Answer/*Jawapan*:

---

5. Puan Zalila received the Credit Card Statement for the month of May. The latest outstanding balance is RM4 350 with the annual interest rate charged is 18%. The conditions stated in the statement are 15 days interest free and 1% per annum for late payment charges. It was found that, during the month of June, Puan Zalila did not make any transactions using credit card.
Puan Zalila menerima Penyata Kad Kredit bagi bulan Mei. Jumlah terkini baki tertunggaknya ialah RM4 350 dengan kadar faedah tahunan yang dikenakan ialah 18%. Syarat yang dinyatakan dalam penyata itu ialah 15 hari tanpa faedah dan 1% setahun bagi caj bayaran lewat. Didapati bahawa bagi tempoh sepanjang bulan Jun, Puan Zalila tidak membuat sebarang transaksi menggunakan kad kredit.

(a) Calculate the minimum payment that needs to be paid by Puan Zalila.
Hitung bayaran minimum yang perlu dijelaskan oleh Puan Zalila.

[2 *marks*/*markah*]

(b) Puan Zalila did not make any payment in May. Calculate the outstanding balance, which will be stated in the statement for the month of June.
Puan Zalila tidak membuat sebarang pembayaran pada bulan Mei. Hitung baki tertunggak, yang akan tertera dalam penyata bulan Jun.

[3 *marks*/*markah*]

Answer/*Jawapan*:
(a)

(b)

6. Syukri arranged 20 pieces of 50 sen coins to form a cylinder with a height of 6 cm and volume of 83.16 cm^3. Calculate
Syukri menyusun 20 keping wang syiling 50 sen untuk membentuk sebuah silinder dengan tinggi 6 cm dan isi padunya ialah 83.16 cm^3. Hitung

(a) the volume, in cm^3, of a piece of coin,
isi padu, dalam cm^3, sekeping wang syiling itu,

[2 *marks*/*markah*]

(b) the radius, in mm, of the coin.
jejari, dalam mm, kepingan wang syiling itu.

[2 *marks*/*markah*]

Answer/*Jawapan*:
(a)

(b)

---

7. Given the information as follows:
Diberi maklumat seperti yang berikut:

- $V = \{1, 2, 3, 4, 5, 6, 7\}$
- $E = \{(1, 2), (1, 2), (1, 4), (2, 4), (2, 5), (3, 4), (3, 4), (3, 6), (4, 5), (4, 5), (4, 6), (4, 7), (6, 7), (6, 7), (6, 7)\}$

Based on the above information, construct a complete graph with multiple edges and loops.
Berdasarkan maklumat di atas, bina satu graf berbilang tepi dan mempunyai gelung dengan lengkap.

[3 *marks*/*markah*]

Answer/*Jawapan*:

8. (a) State whether each of the following is a statement or not a statement.
Nyatakan sama ada setiap yang berikut adalah pernyataan atau bukan pernyataan.

(i) Please wear a mask if you want to get in here!
Sila pakai pelitup muka jika mahu masuk ke sini!

(ii) A triangle has four axes of symmetry.
Sebuah segi tiga mempunya empat paksi simetri.

[2 *marks*/*markah*]

(b) Complete the following arguments:
Lengkapkan hujah yang berikut:

Premise/*Premis* 1: A pentagon has 5 sides.
Sebuah pentagon mempunyai 5 sisi.

Premise/*Premis* 2: *PQRST* is a pentagon.
PQRST ialah sebuah pentagon.

Conclusion/*Kesimpulan*: .....

[1 *mark*/*markah*]

(c) Given the number sequence 3, 6, 9, 15, 24, 39, … arranged according to the Fibonacci number pattern. The 9th term of the sequence of the numbers is 165. Prove whether it is true or false.
Diberi urutan nombor 3, 6, 9, 15, 24, 39, … disusun mengikut pola nombor Fibonacci. Sebutan ke-9 bagi urutan nombor itu ialah 165. Buktikan sama ada benar atau palsu.

[2 *marks*/*markah*]

Answer/*Jawapan*:

(a) (i) .....

(ii) .....

(b) Conclusion/*Kesimpulan*: .....

.....

(c)

9. Diagram 2 shows the prices of two types of smartphones.
Rajah 2menunjukkan harga dua jenis telefon pintar.

Halawei
RM*x*

Appo
RM*y*

Diagram 2/*Rajah 2*

Erlina wants to make a choice between the two smartphones. The total price for a unit of Halawei smartphone and a unit of Appo smartphone is RM2 040. The total price for 3 units of Halawei smartphone and 2 units of Appo smartphone is RM5 070. Erlina buys 6 units of smartphone and pay RM6 000 without receiving balance of money. State the number of Halawei and Appo smartphones that Erlina bought.
Erlina ingin membuat pilihan antara kedua-dua telefon pintar itu. Jumlah harga bagi seunit telefon pintar jenama Halawei dan seunit telefon pintar jenama Appo ialah RM2 040. Jumlah harga bagi 3 unit telefon pintar jenama Halawei dan 2 unit telefon pintar jenama Appo pula ialah RM5 070. Erlina membeli 6 unit telefon pintar dan membayar RM6 000 tanpa menerima baki wang. Nyatakan bilangan telefon pintar jenama Halawei dan Appo yang dibeli oleh Erlina.

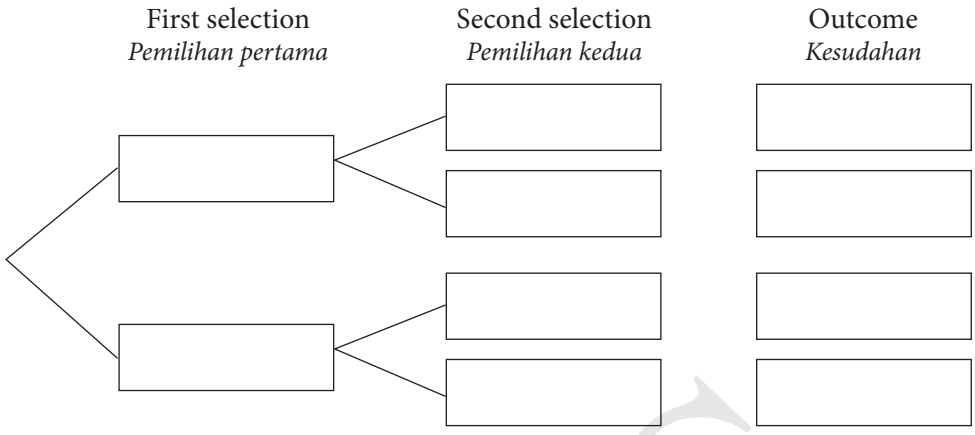
[4 *marks*/*markah*]

Answer/*Jawapan*:

10. Shafie put 5 yellow marbles and 3 red marbles in a container. He selects two marbles randomly from the container simultaneously without replacement.
Shafie memasukkan 5 biji guli berwarna kuning dan 3 biji guli berwarna merah di dalam sebuah bekas. Dia memilih secara rawak dua biji guli daripada bekas itu secara serentak tanpa pemulangan.

(a) Build a tree diagram to represent the above information.
Bina gambar rajah pokok bagi mewakili maklumat di atas.

[2 *marks*/*markah*]



(b) Next, calculate the probability of Shafie getting a marble of different colours.
Seterusnya, hitung kebarangkalian Shafie mendapat guli yang berlainan warna.

[2 *marks*/*markah*]

Answer/*Jawapan*:
(a)

(b)

Section B/*Bahagian* B
[45 marks /*markah*]

Answer **all** questions in this section.
*Jawab **semua** soalan dalam bahagian ini.*

11. (a) Complete Table 2 in the answer space for the equation $y = x^3 - 2x^2 - 11$ for $-3 \leqslant x \leqslant 3$.
Lengkapkan Jadual 2 di ruang jawapan bagi persamaan $y = x^3 - 2x^2 - 11$ untuk $-3 \leqslant x \leqslant 3$.

[2 *marks*/*markah*]

(b) Use the graph paper on page 123 to answer this question.
Gunakan kertas graf di halaman 123 untuk menjawab soalan ini.

Using a scale of 2 cm to 1 unit on the x-axis and 2 cm to 5 units on the y-axis, draw a graph of the equation $y = x^3 - 2x^2 - 11$ for $-3 \leqslant x \leqslant 3$.
Menggunakan skala 2 cm kepada 1 unit pada paksi-x dan 2 cm kepada 5 unit pada paksi-y, lukis graf bagi persamaan $y = x^3 - 2x^2 - 11$ untuk $-3 \leqslant x \leqslant 3$.

[4 *marks*/*markah*]

(c) From the graph in 11(b), find the value of
Daripada graf di 11(b), cari nilai
(i) y when $x = 2.7$
y apabila $x = 2.7$
(ii) x when $y = -35$
x apabila $y = -35$

[2 *marks*/*markah*]

Answer/*Jawapan*:

(a)

x	−3	−2	−1	0	1.5	2	3
y	−56		−14	−11		−11	−2

Table 2/*Jadual 2*

(b) Refer the graph paper on page 123
Rujuk kertas graf di halaman 123

(c) (i) $y =$ .....

(ii) $x =$ .....

Graph for question 11(b)
Graf untuk soalan 11(b)

12. Table 3 shows the information related to the convoy planning that will be done by "Geng Motor Besar Sokmo".
Jadual 3 menunjukkan maklumat berkaitan perancangan konvoi yang akan dilakukan oleh sekumpuluan Geng Motor Besar Sokmo.

Destination *Destinasi*	**Time** *Masa*	**Programme** *Program*
Station 1 *Stesen 1*	0700 – 0845	Depart from Melaka to Gombak for 150 km in 1 hour 45 minutes with a speed of P km j^{-1}. *Bertolak dari Melaka ke Gombak sejauh 150 km dalam masa 1 jam 45 minit dengan kelajuan P km j^{-1}.*
Station 2 *Stesen 2*	0900 – 1030	Depart from Gombak to Kuantan for Q km, with a speed of $83\frac{1}{3}$ km j^{-1} for 1.5 hours. *Bertolak dari Gombak ke Kuantan sejauh Q km, dengan kelajuan $83\frac{1}{3}$ km j^{-1} selama 1.5 jam.*
Station 3 *Stesen 3*	1100 – 1200	Depart from Kuantan to Kuala Terengganu for 1 hour with a speed of 100 km j^{-1}. *Bertolak dari Kuantan ke Kuala Terengganu selama 1 jam dengan kelajuan 100 km j^{-1}.*
Station 4 *Stesen 4*	1300 – R	Depart from Kuala Terengganu and arrive at Kota Bharu for 125 km with a speed of 62.5 km j^{-1}. *Bertolak dari Kuala Terengganu dan tiba di Kota Bharu sejauh 125 km dengan kelajuan 62.5 km j^{-1}.*

Table 3/*Jadual 3*

(a) Calculate the value for each of the following.
Hitung nilai bagi setiap yang berikut.
(i) P
(ii) Q
(iii) R

[6 *marks*/*markah*]

(b) Next, complete the distance-time graph in the answer space to represent the journey of the convoy from Melaka to Kota Bharu.
Seterusnya, lengkapkan graf jarak-masa pada ruang jawapan bagi menggambarkan perjalanan konvoi tersebut dari Melaka ke Kota Bharu.

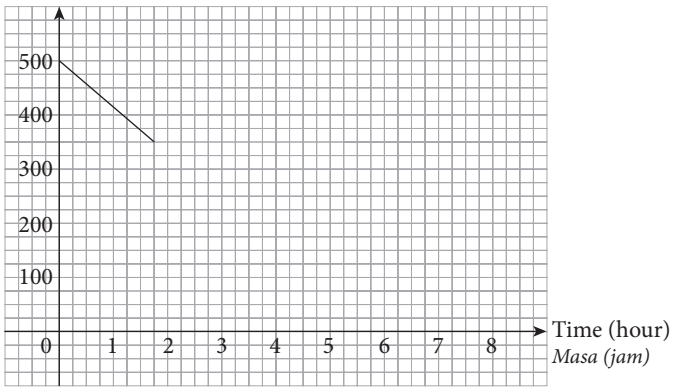
[4 *marks*/*markah*]

Answer/*Jawapan*:
(a) (i)

(ii)

(iii)

(b) Distance (km)
Jarak (km)



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13. (a) (i) In the diagram in the answer space, draw a straight line for the equation $2y = 14 - x$.
Pada rajah di ruang jawapan, lukis satu garis lurus bagi persamaan $2y = 14 - x$.

(ii) Next, in the diagram, shade the region that satisfies all three inequalities $2y \geqslant 14 - x$, $y < 7$ and $x \leqslant 14$.
Seterusnya, pada rajah itu, lorek rantau yang memuaskan ketiga-tiga ketaksamaan $2y \geqslant 14 - x$, $y < 7$ dan $x \leqslant 14$.

(iii) Determine whether the point (12, 6) is in the shaded region or not.
Tentukan sama ada titik (12, 6) berada di dalam rantau yang dilorekkan atau tidak.

[4 *marks*/*markah*]

(b) Diagram 3 shows the cost and production projections for a company.
Rajah 3 menunjukkan unjuran kos dan pengeluaran bagi sebuah syarikat.

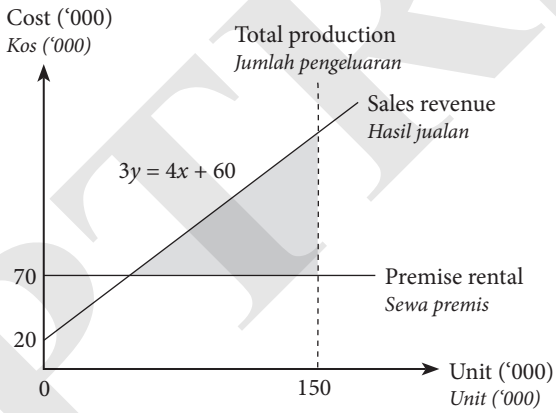


Diagram 3/***Rajah 3***

(i) Calculate the minimum production that needs to be produced to cover the rent of the premise.
Hitung pengeluaran minimum yang perlu dihasilkan untuk menampung sewa premis.

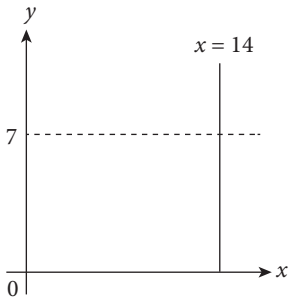
[2 *marks*/*markah*]

(ii) List three inequalities that satisfy the shaded region.
Senaraikan tiga ketaksamaan yang memuaskan rantau berlorek.

[3 *marks*/*markah*]

Answer/*Jawapan*:

(a) (i) (ii) (iii)



(b) (i)

(ii) …….

…….

…….

---

14. (a) Diagram 4 is a Venn diagram showing set P, set Q and set R with the universal set, $\xi = P \cup Q \cup R$.
Rajah 4 ialah gambar rajah Venn yang menunjukkan set P, set Q dan set R dengan keadaan set semesta, $\xi = P \cup Q \cup R$.

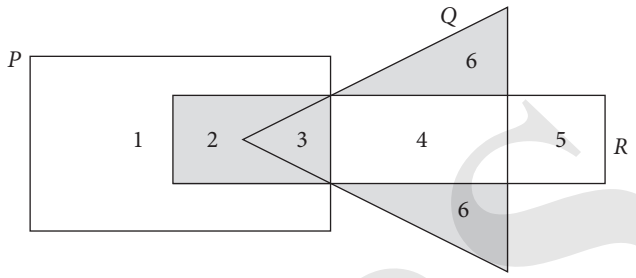


Diagram 4/*Rajah 4*

(i) Determine the region for each of the following:
Tentukan rantau bagi setiap yang berikut:
(a) $(P \cup Q)'$
(b) $Q \cap R \cup P$

[3 *marks*/*markah*]

(ii) State a set operation that describes the shaded region in the above diagram.
Nyatakan satu operasi set yang menerangkan rantau berlorek dalam rajah di atas.

[2 *marks*/*markah*]

(b) Given $\xi = X \cup Y \cup Z$, $Z \subset Y$ and $Z \not\subset X$, draw a set that represents the relation and then shade $Y \cup Z \cap X'$.
Diberi $\xi = X \cup Y \cup Z$, $Z \subset Y$ and $Z \not\subset X$, *lukis set yang menunjukkan hubungan tersebut dan seterusnya lorekkan* $Y \cup Z \cap X'$.

[4 *marks*/*markah*]

Answer/*Jawapan*:

(a) (i) (a) …….

(b) ……

(ii) ……

(b)

15. (a) The data in Table 4 shows the total score obtained by 30 teams participating in a Futsal competition.
Data dalam Jadual 4 menunjukkan jumlah skor yang diperoleh 30 buah pasukan yang menyertai suatu pertandingan Futsal.

Score ***Skor***	1	2	3	4	5	6	7
Team ***Pasukan***	3	5	6	8	4	3	1

Table 4/*Jadual 4*

Calculate the variance, σ^2 and standard deviation, σ of the scores obtained.
Hitung varians, σ^2 dan sisihan piawai, σ bagi skor yang diperoleh.

[4 *marks*/*markah*]

(b) The data in Table 5 shows the age of the players for the handball team, *X* and *Y*.
Data dalam Jadual 5 menunjukkan umur pemain bagi pasukan bola baling, X dan Y.

Team ***Pasukan***	**Number of players** ***Bilangan pemain***	**Mean** ***Min***	**Variance** ***Varians***
Team *X* *Pasukan X*	18	22	3.5
Team *Y* *Pasukan Y*	15	26	2.5

Table 5/*Jadual 5*

If all players from both teams are combined, calculate the standard deviation for the age of the players in the combined team.
Jika kesemua pemain daripada kedua-dua pasukan digabungkan, hitung sisihan piawai bagi umur pemain dalam gabungan pasukan itu.

[4 *marks*/*markah*]

Answer/*Jawapan*:

(a)

(b)

Section C/*Bahagian* C
[15 marks / *markah*]

Answer only **one** question in this section.
*Jawab **satu** soalan sahaja dalam bahagian ini.*

16. (a) Encik Latif and Puan Asni just got married. The total income of both of them is RM9 000 per month. Each month, their fixed and variable expenses are 60% of their total income. Each year, their income will increase by RM400. They plan to buy a house worth RM350 000 in 5 years by making a down payment of 10% of the house price. The balance will be financed through a bank loan at an interest rate of 3.5% per annum for a period of 25 years.
Encik Latif dan Puan Asni baru melangsungkan perkahwinan. Jumlah pendapatan mereka berdua ialah RM9 000 sebulan. Setiap bulan, perbelanjaan tetap dan tidak tetap mereka adalah 60% daripada jumlah pendapatan. Setiap tahun, pendapatan mereka akan meningkat sebanyak RM400. Mereka merancang untuk membeli sebuah rumah yang berharga RM350 000 dalam tempoh 5 tahun dengan membuat bayaran pendahuluan sebanyak 10% daripada harga rumah. Baki daripada harga rumah itu akan dibiayai melalui pinjaman bank dengan kadar faedah 3.5% setahun untuk tempoh 25 tahun.

(i) Calculate the monthly savings, in RM, that they need to save for that purpose.
Hitung simpanan bulanan, dalam RM, yang perlu dilakukan oleh mereka bagi tujuan tersebut.

[4 *marks*/*markah*]

(ii) Do they make a good plan for the purpose of buying the house? Justify your answer.
Adakah mereka membuat perancangan yang baik bagi tujuan pembelian rumah tersebut? Berikan justifikasi anda.

[5 *marks*/*markah*]

(b) The following is an estimated monthly income and expenses of Encik Mustafi and his wife.
Berikut ialah anggaran pendapatan dan perbelanjaan bulanan Encik Mustafi dan isterinya.

Item/ *Perkara*	**RM**	
Income/ *Pendapatan*		
Net salary of Encik Mustafi/ *Gaji bersih Encik Mustafi*	10 000	
Net salary of his wife/ *Gaji bersih isteri*	8 000	
Other income/ *Lain-lain pendapatan*	1 000	
Total monthly income/ *Jumlah pendapatan bulanan*	19 000	
Minus/ *Tolak*		
Fixed savings (10% from net income)/ *Simpanan tetap (10% daripada pendapatan gaji bersih)*	1 900	
Fixed savings (emergency fund)/ *Simpanan tetap (dana kecemasan)*	1 000	
Disposable income/ *Pendapatan boleh guna*		16 100
Minus fixed expenses/ *Tolak perbelanjaan tetap*		
Housing loan/ *Pinjaman rumah*	3 500	
Loan instalments for two cars/ *Ansuran pinjaman dua buah kereta*	2 500	
Insurance premiums/ *Premium insurans*	1 000	
Children's caregiver/ *Upah pengasuh anak-anak*	1 000	
Total fixed expenses/ *Jumlah perbelanjaan tetap*		8 000
Minus variable expenses/ *Tolak perbelanjaan tidak tetap*		
Home utilities/ *Belanja utiliti rumah*	1 500	
Children's school expenses/ *Perbelanjaan persekolahan anak-anak*	1 000	
Petrol and toll expenses/ *Belanja petrol dan tol*	900	
Groceries/ *Barangan dapur*	2 000	
Allowances for parents/ *Pemberian kepada ibu bapa*	1 500	
Savings for overseas vacation/ *Simpanan untuk percutian ke luar negara*	1 000	
Total variable expenses/ *Jumlah perbelanjaan tidak tetap*		7 900
Surplus of monthly income/ *Lebihan pendapatan bulanan*		200

(i) Encik Mustafi plans to provide financial allocation for his children to continue their education amounting to RM300 000 within 10 years. Calculate the monthly savings, in RM, that Encik Mustafi needs to save for this purpose.
Encik Mustafi merancang untuk menyediakan peruntukan kewangan bagi anak-anaknya menyambung pelajaran yang berjumlah RM300 000 dalam tempoh 10 tahun. Hitung simpanan bulanan, dalam RM, yang perlu dilaksanakan oleh Encik Mustafi bagi tujuan ini.

[3 *marks*/*markah*]

(ii) Encik Mustafi needs opinions and advice for him to plan his expenses well. Give three appropriate suggestions for this purpose.
Encik Mustafi memerlukan pandangan dan nasihat untuk beliau merancang perbelanjaan dengan baik. Berikan tiga cadangan yang sesuai untuk tujuan ini.

[3 *marks*/*markah*]

Answer/ *Jawapan:*

(a) (i) (ii)

(b) (i) (ii)

---

17. Diagram 5.1 shows a combination of two solids on a horizontal surface. *MPN* is a right-angled triangle and *P* is 2.2 cm perpendicular to the straight line *MN*.
Rajah 5.1 menunjukkan gabungan dua buah pepejal di atas permukaan mengufuk. MPN adalah segi tiga bersudut tegak dan P berada 2.2 cm tegak dari garis lurus MN.

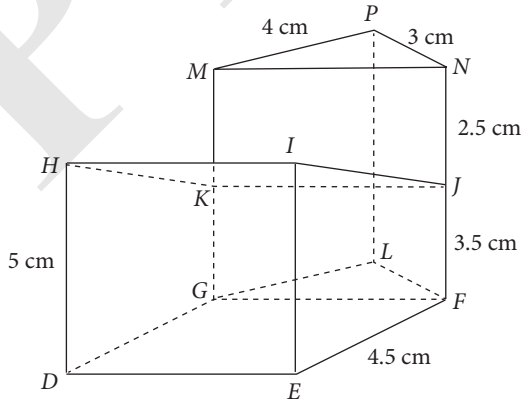


Diagram 5.1/*Rajah 5.1*

(a) (i) Calculate the length, in cm, of *JK*.
Hitung panjang, dalam cm, bagi JK.

[2 *marks*/*markah*]

(ii) Using actual measurements, draw the plan of the composite solid.
Menggunakan ukuran sebenar, lukis pelan gabungan pepejal itu.

[3 *marks*/*markah*]

(b) Diagram 5.2 has been cut out and partially removed. The remaining parts are shown in Diagram 9.2.
Rajah 5.2 telah dipotong dan dikeluarkan sebahagiannya. Bahagian yang tinggal ditunjukkan dalam Rajah 9.2.

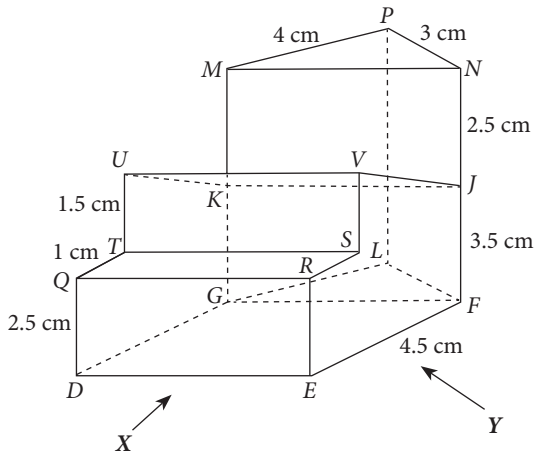


Diagram 5.2/*Rajah* 5.2

Using actual measurements, draw
Menggunakan ukuran sebenar, lukis

(i) the front view of the remaining solid, parallel to *DE*, as seen from *X*.
pandangan hadapan pepejal yang tinggal, selari dengan DE, sebagaimana dilihat dari X.

[5 *marks*/*markah*]

(ii) the side view of the remaining solid, parallel to *EF*, as seen from *Y*.
pandangan sisi pepejal yang tinggal, selari dengan EF, sebagaimana dilihat dari Y.

[5 *marks*/*markah*]

Answer/*Jawapan*:

(a) (i) (ii)

(b) (i) (ii)

ASSESSMENT 2

Section A/*Bahagian A*
[40 marks/*markah*]

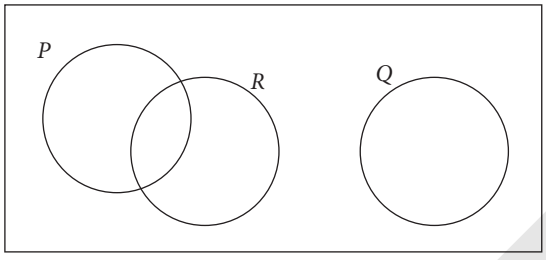
Answer **all** *questions.*
Jawab ***semua*** *soalan.*

1. (a) The Venn diagram in the answer space shows set P, set Q and set R such that the universal set, $\xi = P \cup Q \cup R$.
Gambar rajah Venn di ruang jawapan menunjukkan set P, set Q dan set R dengan keadaan set semesta, $\xi = P \cup Q \cup R$.
On the diagram in the answer space, shade the set $(P' \cap R) \cup Q$.
Pada rajah di ruang jawapan, lorekkan set $(P' \cap R) \cup Q$.

[2 *marks*/*markah*]

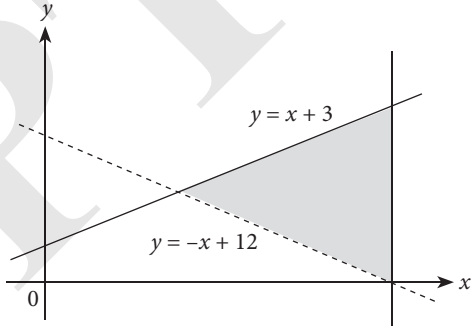
Answer/*Jawapan*:

(a) ξ



(b) Write down three inequalities that satisfy the following shaded region:
Tuliskan tiga ketaksamaan yang memuaskan rantau berlorek yang berikut:

[3 *marks*/*markah*]



Answer/*Jawapan*:

(b) (i) .....

(ii) .....

(iii) .....

2. Diagram 1 shows two pieces of paper, *X* and *Y* belonged to Elena. Paper *X* is rectangular shaped while paper *Y* is trapezoidal shaped.
Rajah 1 menunjukkan dua keping kertas, X dan Y yang dimiliki oleh Elena. Kertas X berbentuk segi empat tepat manakala kertas Y berbentuk trapezium.

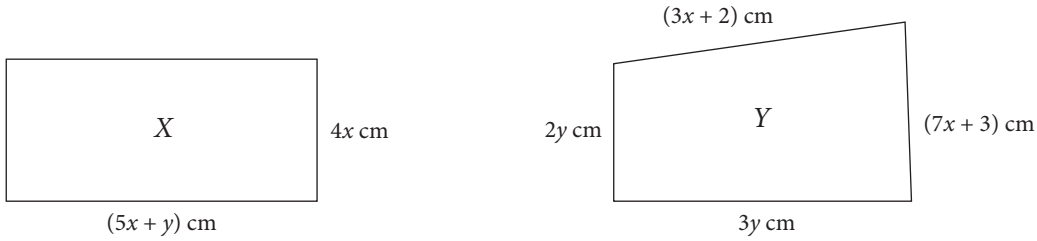


Diagram 1/*Rajah 1*

It is given that the perimeter of paper *X* is 120 cm while the perimeter of paper *Y* is 130 cm. Using the method of simultaneous linear equation, find the values of *x* and *y*.
Diberi perimeter kertas X ialah 120 cm manakala perimeter kertas Y ialah 130 cm. Menggunakan kaedah persamaan linear serentak, cari nilai x dan y.

[4 *marks*/*markah*]

Answer/*Jawapan*:

---

3. Amanda plans to buy a car with the price of RM85 000. She will pay a down payment of 10% and the balance will be paid by loan from bank *X*. Bank *X* offers a simple interest rate of 3.5% per annum for the period of 9 years. Calculate the monthly instalment to be paid by Amanda during the period.
Amanda merancang untuk membeli sebuah kereta yang berharga RM85 000. Dia akan membayar 10% wang pendahuluan dan selebihnya akan dibayar menggunakan pinjaman dari bank X. Bank X mengenakan kadar faedah mudah 3.5% setahun bagi tempoh 9 tahun. Hitung bayaran ansuran bulanan yang perlu dibayar oleh Amanda dalam tempoh tersebut.

[3 *marks*/*markah*]

Answer/*Jawapan*:

4. In Diagram 2, *PQ* and *RS* are two straight lines.
Dalam Rajah 2, PQ dan RS ialah dua garis selari.

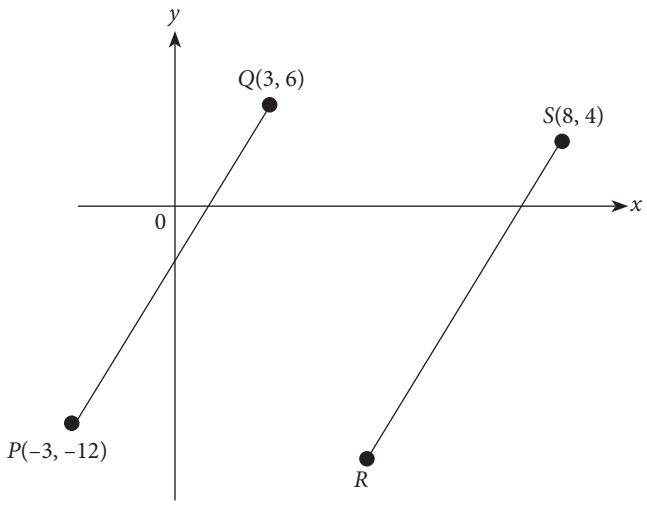


Diagram 2/*Rajah 2*

State
Nyatakan
(a) the equation of straight line *RS*,
persamaan garis lurus RS,
(b) the *x*-intercept of straight line *RS*.
pintasan-x bagi garis lurus RS.

[3 *marks*/*markah*]

Answer/*Jawapan*:

(a)

(b)

5. A rectangular shaped wall with the area of 120 m^2 will be built by using 6 000 bricks with the length of $(9x - 7)$ cm and width of $(3x + 1)$ cm each. Calculate the value of x.
Satu ruang dinding berbentuk segi empat tepat dengan keluasan 120 m^2 akan dibina menggunakan 6 000 keping batu bata dengan panjang $(9x - 7)$ cm dan lebar $(3x + 1)$ cm setiap satu. Hitung nilai x.

[4 *marks*/*markah*]

Answer/*Jawapan*:

---

6. (a) Determine whether each of the following statements is true or false.
Tentukan sama ada setiap pernyataan yang berikut benar atau palsu.

(i) $10 > 3^2 + 4$

(ii) $12 = 3^2 - 4$ or/atau $12 > 3^2 - 4$

[2 *marks*/*markah*]

(b) Write down two implications from the following sentence.
Tuliskan dua implikasi daripada ayat berikut.

$\frac{m}{n}$ is a proper fraction if and only if m and n are integers such that $0 < m < n$.
$\frac{m}{n}$ *ialah satu pecahan wajar jika dan hanya jika m dan n ialah integer dengan keadaan* $0 < m < n$.

[2 *marks*/*markah*]

Answer/*Jawapan*:

(a) (i) ……

(ii) ……

(b) (i) Implication/ *Implikasi* 1: ……

……

(ii) Implication/ *Implikasi* 2: ……..……..

……

7. Diagram 3 shows the time taken for the journey from one location to another.
Rajah 3 menunjukkan masa yang diambil bagi perjalanan dari satu lokasi ke lokasi yang lain.

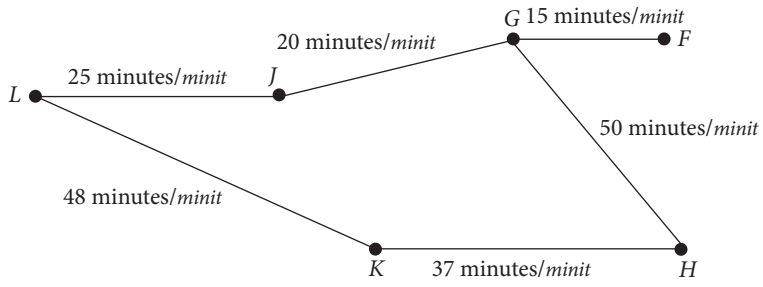


Diagram 3/*Rajah 3*

Zaiful, who is at *F* plans to go to his friend's house at *K*. He has two choices of public transport to use, which is a bus or taxi. The bus offers a rate of RM0.40 for each 1 km by passing through *G*, *J* and *L* to reach *K*. The bus will stop for 5 minutes at each location. On the other hand, the taxi service uses the fastest route from *F* to *K* with the rate of RM0.60 for each 1 km. The bus and taxi move with the speed of 60 km h^{-1} and 75 km h^{-1} respectively.
State the mode of transport that should be chosen by Zaiful for optimum advantage. Give two justifications for the choice.
Zaiful yang berada di F merancang untuk pergi ke rumah rakannya di K. Dia mempunyai dua pilihan pengangkutan awam untuk digunakan, iaitu bas atau teksi. Bas mengenakan tambang pada kadar RM0.40 bagi setiap 1 km dengan melalui G, J dan L untuk tiba di K. Bas tersebut akan berhenti selama 5 minit di setiap lokasi tersebut. Perkhidmatan teksi pula menggunakan laluan terpantas dari F ke K dengan kadar tambang RM0.60 bagi setiap 1 km. Bas dan teksi itu masing-masing bergerak dengan kelajuan 60 km j^{-1} dan 75 km j^{-1}.
Nyatakan mod pengangkutan yang patut dipilih oleh Zaiful untuk memberikannya kelebihan paling optimum. Berikan dua justifikasi bagi pilihan itu.

[4 *marks*/*markah*]

Answer/*Jawapan*:

ASSESSMENT 2

8. Diagram 4 shows five cards labelled with vowels and consonants that are put inside a box.
Rajah 4 menunjukkan lima keping kad berlabel huruf vokal dan huruf konsonan yang diletakkan di dalam sebuah kotak.

Diagram 4/*Rajah 4*

A card is chosen at random and the letter on the card is written down. The card is put again inside the box before a second card is chosen at random.
Sekeping kad dipilih secara rawak dan huruf pada kad dicatatkan. Kad itu dimasukkan semula ke dalam kotak sebelum kad kedua dipilih secara rawak.

(a) List the sample space.
Senaraikan ruang sampel.

[2 *marks*/*markah*]

(b) By listing all the possible outcomes of the event, find the probability that both cards have the same type of letter.
Dengan menyenaraikan semua kesudahan peristiwa yang mungkin, cari kebarangkalian bahawa kedua-dua kad mempunyai jenis huruf yang sama.

[2 *marks*/*markah*]

Answer/*Jawapan*:
(a)

(b)

---

9. Table 1 shows the price of two types of calculators.
Jadual 1 menunjukkan harga bagi dua jenis kalkulator.

Calculator ***Kalkulator***	**Price** ***Harga***
X	RM*p*
Y	RM*q*

Table 1/*Jadual 1*

Koperasi Gemilang bought 4 calculators *X* and 3 calculators *Y* with the total cost of RM360. Koperasi Angkasa bought 2 calculators *X* and 4 calculators *Y* with the total cost of RM30 less than Koperasi Gemilang. Using matrix method, calculate the price of calculator *X* and calculator *Y*.
Koperasi Gemilang membeli 4 buah kalkulator X dan 3 buah kalkulator Y dengan jumlah kos RM360. Koperasi Angkasa membeli 2 buah kalkulator X dan 4 buah kalkulator Y dengan jumlah kos kurang RM30 daripada Koperasi Gemilang. Menggunakan kaedah matriks, hitung harga bagi sebuah kalkulator X dan sebuah kalkulator Y.

[4 *marks*/*markah*]

Answer/*Jawapan*:

10. Diagram 5 shows the speed-time graph for the journey of a car from town *X* to town *Y*.
Rajah 5 menunjukkan graf laju-masa bagi perjalanan sebuah kereta dari bandar X ke bandar Y.

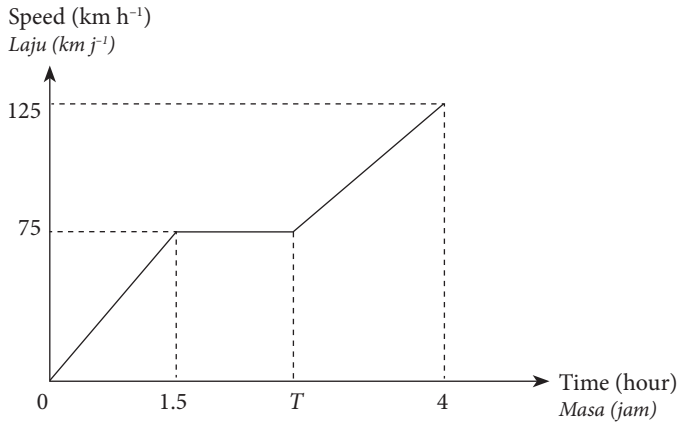


Diagram 5/*Rajah 5*

(a) Calculate the rate of change of speed, in km h^{-2}, of the journey of the car for the first 1.5 hours.
Hitung kadar perubahan laju, dalam km j^{-2}, bagi perjalanan kereta itu dalam 1.5 jam yang pertama.

(b) If the distance travelled for the whole journey is 281.5 km, calculate the value of *T*.
Jika jumlah jarak yang dilalui bagi keseluruhan perjalanan ialah 281.5 km, hitung nilai T.

[5 *marks*/*markah*]

Answer/*Jawapan*:

Section B
Bahagian B
[45 marks/*markah*]

Answer **all** questions in this section.
*Jawab **semua** soalan dalam bahagian ini.*

11. (a) Complete Table 2 in the answer space for the equation $y = 2x^2 - x - 10$ by writing down the values of y when $x = -4$ and $x = 2$.
Lengkapkan Jadual 2 di ruang jawapan bagi persamaan $y = 2x^2 - x - 10$ dengan menulis nilai-nilai y apabila $x = -4$ dan $x = 2$.

[2 *marks*/*markah*]

(b) For this part of the question, use the graph paper provided on page 139. You may use a flexible curve rule.
Untuk ceraian soalan ini, gunakan kertas graf yang disediakan pada halaman 139. Anda boleh menggunakan pembaris fleksibel.
Using a scale of 2 cm to 1 unit on the x-axis and 2 cm to 5 units on the y-axis, draw the graph of $y = 2x^2 - x - 10$ for $-4 \leqslant x \leqslant 4$.
Dengan menggunakan skala 2 cm kepada 1 unit pada paksi-x dan 2 cm kepada 5 unit pada paksi-y, lukiskan graf $y = 2x^2 - x - 10$ bagi $-4 \leqslant x \leqslant 4$.

[4 *marks*/*markah*]

(c) From the graph in (b), find
Daripada graf di (b), cari
(i) the values of x when $y = 8$,
nilai-nilai x apabila y = 8,
(ii) the value of y when $x = 1.3$.
nilai y apabila x = 1.3.

[3 *marks*/*markah*]

Answer/*Jawapan*:

(a)

x	–3	–2	–1.5	0	1	2	3	4
y	11	0		–10	–9		5	18

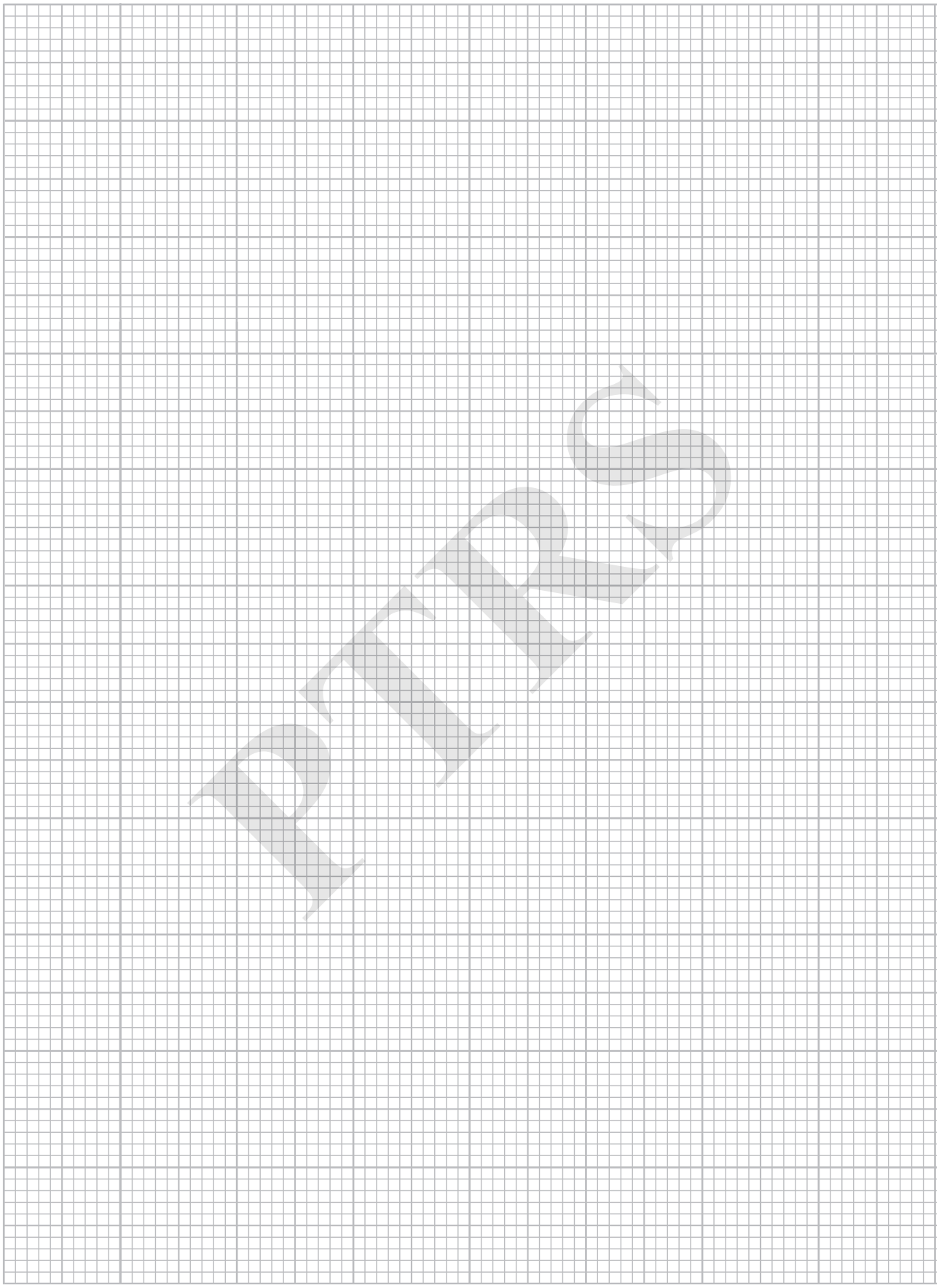
Table 2/*Jadual 2*

(b) Refer to the graph on page 139.
Rujuk graf di halaman 139

(c) (i) x = …….....

y = ……

Graph for Question 11(b)
Graf untuk Soalan 11(b)



12. (a) Transformation **U** is a translation $\begin{pmatrix} 4 \\ -1 \end{pmatrix}$ and transformation **W** is a reflection in the straight line $y = x$.
State the coordinates of the image of point (–2, 3) under each of the following transformations.
Penjelmaan **U** *ialah translasi* $\begin{pmatrix} 4 \\ -1 \end{pmatrix}$ *dan penjelmaan* **W** *ialah pantulan pada garis lurus* $y = x$.
Nyatakan koordinat imej bagi titik (–2, 3) di bawah setiap penjelmaan berikut.
(i) **U**
(ii) **UW**

[3 *marks*/*markah*]

(b) Diagram 6 shows three pentagons, *ABCDE*, *EFGHI* and *EPQRS*, drawn on a Cartesian plane.
Rajah 6 menunjukkan tiga pentagon, ABCDE, EFGHI dan EPQRS, dilukis pada suatu satah Cartes.

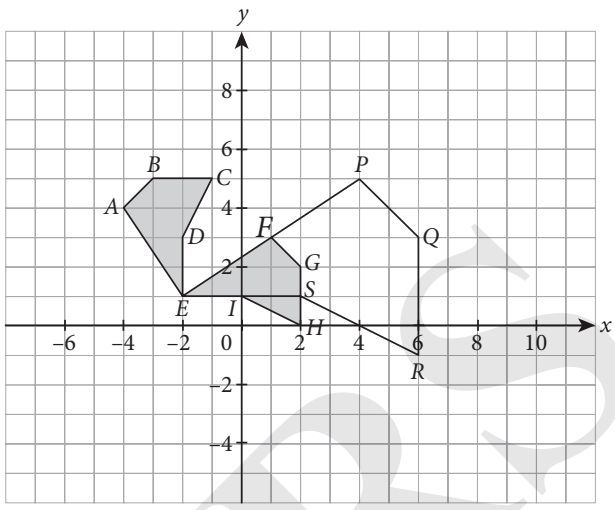


Diagram 6/***Rajah 6***

EPQRS is the image of *EABCD* under the transformation **NM**.
Describe in full, the transformation
EPQRS ialah imej EABCD di bawah gabungan penjelmaan **NM**.
Huraikan selengkapnya, penjelmaan
(i) **M**
(ii) **N**

[6 *marks*/*markah*]

Answer/*Jawapan*:

(a) (i) ……

(ii) ……

(b) (i) **M**: ……

N: ……

13. Diagram 7 shows the combination of a right prism with rectangular base and a cuboid with square base on a horizontal plane.
Rajah 7 menunjukkan gabungan sebuah prisma tegak dengan tapak segi empat tepat dan sebuah kuboid dengan tapak segi empat sama di atas permukaan mengufuk.

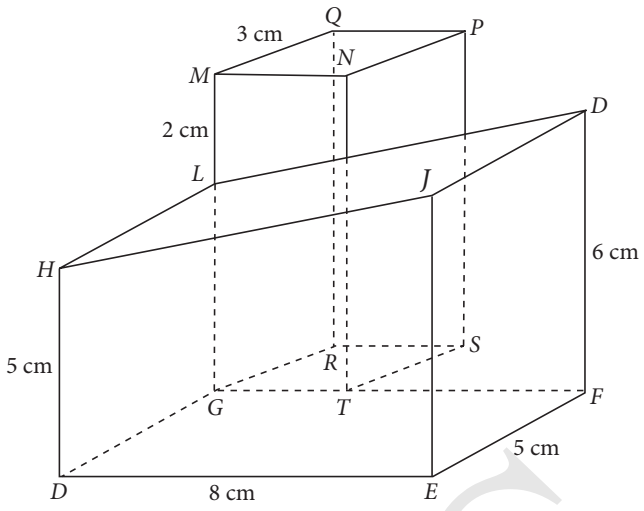


Diagram 7/*Rajah 7*

Draw to full scale,
Lukis dengan skala penuh,

(a) front elevation of the combination of the solids as viewed from straight line *DE*.
dongakan depan gabungan pepejal itu sebagaimana dilihat dari garis lurus DE.

[5 *marks*/*markah*]

(b) side elevation of the combination of the solids as viewed from straight line *EF*.
dongakan sisi gabungan pepejal itu sebagaimana dilihat dari garis lurus EF.

[4 *marks*/*markah*]

Answer/*Jawapan*:
(a)

(b)

14. (a) Table 3 shows the sales, in RM, of palm oil from Encik Yusuf's plantation for the period of five months.
Jadual 3 menunjukkan jualan, dalam RM, minyak kelapa sawit dari ladang Encik Yusuf untuk tempoh lima bulan.

Month ***Bulan***	January *Januari*	February *Februari*	March *Mac*	April *April*	May *Mei*
Sales (RM) ***Jualan (RM)***	1 300	1 450	2 500	1 870	1 950

Table/*Jadual* 3

Calculate the standard deviation for the total sales in the five months.
Hitung sisihan piawai bagi jumlah jualan untuk tempoh lima bulan tersebut.

[4 *marks*/*markah*]

(b) Table 4 shows the ages of 40 visitors of Durian Festival.
Jadual 4 menunjukkan umur bagi 40 orang pengunjung Pesta Durian.

Age (years) ***Umur (tahun)***	**Number of visitors** ***Bilangan pengunjung***	**Upper boundary** ***Sempadan atas***
10 – 19	4	
20 – 29	6	
30 – 39	10	
40 – 49	9	
50 – 59	6	
60 – 69	4	
70 – 79	1	

Table/*Jadual* 4

(i) Complete the frequency table above.
Lengkapkan jadual kekerapan di atas.

[1 *mark*/*markah*]

(ii) Use the graph paper provided on page 143 to answer this question.
Gunakan kertas graf yang disediakan di halaman 143 untuk menjawab soalan ini.
Using a scale of 2 cm to 10 years on the x-axis and 2 cm to 5 visitors on the y-axis, draw an ogive for the data.
Menggunakan skala 2 cm kepada 10 tahun pada paksi-x dan 2 cm kepada 5 pengunjung pada paksi-y, lukis ogif bagi data itu.

[4 *marks*/*markah*]

(iii) Visitors with the age of more than x years are compulsory to undergo a health screening test before joining the festival. If 25% of the visitors had already done the health screening test, state the value of x.
Pengunjung yang berusia lebih daripada x tahun diwajibkan menjalani ujian saringan kesihatan sebelum menyertai pesta tersebut. Jika 25% daripada pengunjung telah menjalani ujian saringan kesihatan itu, nyatakan nilai x.

[1 *mark*/*markah*]

Answer/*Jawapan*:
(a)

(b) (iii)

Graph for Question 14(b)
Graf untuk Soalan 14(b)

15. Table 5 shows the Motor Tariff for motor insurance policy issued in peninsular Malaysia, Sabah and Sarawak.
Jadual 5 menunjukkan Tarif Motor bagi polisi insurans motor yang dikeluarkan di Semenanjung Malaysia, Sabah dan Sarawak.

Engine capacity not exceeding (cc) ***Kapasiti enjin tidak melebihi (cc)***	**Peninsular Malaysia** ***Semenanjung Malaysia***		**Sabah and Sarawak** ***Sabah dan Sarawak***	
	Comprehensive policy (RM) ***Polisi komprehensif* (RM)**	**Third party policy (RM)** ***Polisi pihak ketiga (RM)***	**Comprehensive policy (RM)** ***Polisi komprehensif (RM)***	**Third party policy (RM)** ***Polisi pihak ketiga (RM)***
1 400	273.80	120.60	196.20	67.50
1 650	305.50	135.00	220.00	75.60
2 200	339.10	151.20	243.90	85.20
3 050	372.60	167.40	266.50	93.60
4 100	404.30	181.80	290.40	101.70
4 250	436.00	196.20	313.00	110.10
4 400	469.60	212.40	336.90	118.20
More than/*Melebihi 4 400*	501.30	226.80	359.50	126.60

Table 5/*Jadual 5*

Azman has a car that he uses to travel to work in Kuala Lumpur. The information of the car is as followed:
Azman mempunyai sebuah kereta yang digunakan untuk ke tempat kerjanya di Kuala Lumpur. Maklumat kereta itu adalah seperti yang berikut:

Total sum to be insured ***Jumlah yang ingin diinsuranskan***	: RM50 000
Age of vehicle ***Umur kenderaan***	: 10 years/tahun
Engine capacity ***Kapasiti enjin***	: 1 750 cc
NCD	: 30%

Calculate the gross premium of Azman's car for comprehensive policy, third party policy, fire and theft, and third party policy based on Table 5.
Hitung premium kasar bagi kereta Azman untuk polisi komprehensif, polisi pihak ketiga, kebakaran dan kecurian, dan polisi pihak ketiga berdasarkan Jadual 5.

[9 *marks*/*markah*]

Answer/*Jawapan*:

Section C
Bahagian C
[15 marks/*markah*]

Answer only **one** question in this section.
*Jawab **satu** soalan sahaja dalam bahagian ini.*

16. Diagram 8 shows a house that Encik Rashidi wants to build in 8 years' time. The cost of the house construction is estimated to be RM250 000.
Rajah 8 menunjukkan sebuah rumah yang ingin dibina oleh Encik Rashidi dalam tempoh 8 tahun akan datang. Kos pembinaan rumah tersebut dianggarkan berjumlah RM250 000.

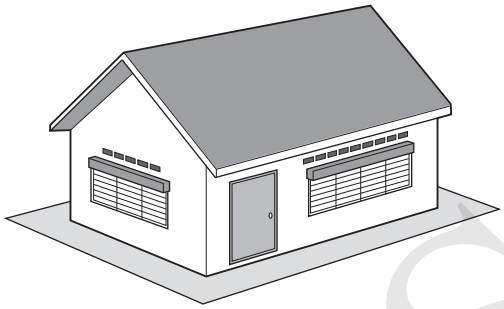


Diagram 8/*Rajah 8*

(a) Encik Rashidi practises SMART concept for the house construction. Prove the compliance of the following concepts:
Encik Rashidi mempraktikkan konsep SMART dalam pembinaan rumah tersebut. Buktikan pematuhan konsep yang berikut:
(i) Specific/ *Khusus*, *S*
(ii) Measurable/ *Boleh diukur*, *M*
(iii) Time-bound/ *Tempoh masa, T*

[3 *marks*/*markah*]

(b) The total cost of the house construction varies directly with the number of bricks and varies inversely with the mass of cement used. Encik Rashidi allocates a sum of RM175 000 to build the house with 280 000 bricks and 8 tonnes of cement. Calculate the number of bricks used if Encik Rashidi uses 20 tonnes of cement during the whole construction.
Jumlah kos pembinaan rumah tersebut berubah secara langsung dengan bilangan batu bata dan secara songsang dengan jisim simen yang digunakan. Encik Rashidi memperuntukkan sejumlah RM175 000 untuk pembinaan rumah tersebut dengan penggunaan 280 000 batu bata dan 8 tan simen. Hitung bilangan batu bata yang digunakan sekiranya Encik Rashidi menggunakan 20 tan simen bagi keseluruhan pembinaan tersebut.

[4 *marks*/*markah*]

(c) It is given that the surface area of the house is 50 000 m^2 and the whole surface will be painted with $(x - 10)$ cans of paint of various colours. Each can of paint can cover $25x$ m^2 of the surface area of the house. Calculate the number of cans of paint will be used.
Diberi luas permukaan rumah tersebut ialah 50 000 m^2 dan keseluruhan permukaan tersebut akan dicat dengan menggunakan $(x - 10)$ tin cat pelbagai warna. Setiap 1 tin cat mampu melitupi $25x$ m^2 daripada luas permukaan rumah. Hitung bilangan tin cat yang akan digunakan.

[4 *marks*/*markah*]

(d) Encik Rashidi has a current saving of $RM1.204 \times 10^5$. He plans to save consistently each month for 8 years to cover the total cost of the house construction. Calculate the total, in RM, need to be saved by Encik Rashidi in a month. Express the answer in standard form.
Encik Rashidi mempunyai simpanan semasa berjumlah $RM1.204 \times 10^5$. Beliau merancang untuk menyimpan secara tetap setiap bulan selama 8 tahun untuk membayar kos keseluruhan pembinaan rumah tersebut. Hitung jumlah, dalam RM, yang perlu disimpan oleh Encik Rashidi dalam sebulan. Ungkapkan jawapan dalam bentuk piawai.

[4 *marks*/*markah*]

Answer/*Jawapan*:
(a)

(b)

(c)

(d)

ANSWERS

FORM 4

CHAPTER 1 Quadratic Functions and Equations in One Variable
Ungkapan dan Persamaan Kuadratik dalam Satu Pemboleh Ubah

1. (a) 2, –10 (b) –3, –4 (c) 8, –4 (d) 5, 4
(e) $\frac{1}{2}, -\frac{5}{3}$ (f) $\frac{3}{2}, -\frac{1}{4}$ (g) $-\frac{2}{3}, -\frac{5}{2}$ (h) $6, -\frac{5}{2}$
(i) 6, –2 (j) 4, –3 (k) 9, 3 (l) $\frac{7}{2}, -1$
(m) $\frac{5}{2}, -1$ (n) 4, –7 (o) $\frac{2}{3}, -1$ (p) $4, -\frac{5}{3}$

2. (a) $6x^2 + x - 15$
(b) $x = 15, x = -\frac{91}{6}$ (Ignore/*Abaikan*) $PQ = 50$

3. $x = 150, x = 0$ (Ignore/*Abaikan*) Proven/*Terbukti*

4. 75 kmh^{-1}/*75 kmj^{-1}*

5. (a) $x = 2$ (b) 76 years/*tahun*

6. 45

CHAPTER 2 Number Bases
Asas Nombor

1. 101 **2.** 1314_6 **3.** 72_7 **4.** 38

5. 325, 20_{10}, 11110_2, 47_8

6.

5	237	235	 2
5	47	45	 2
5	9	5	 4
5	1	0	 1
	0		

$= 1422_5$

7. (a) 320_5 (b) 4454_6 (c) 5331_7 (d) 18567_9
(e) 10111111_2 (f) 4033_5 (g) $13\,750_8$ (h) 1320_5

8. (a) 101001_2 (b) 301_9 (c) 2013_5 (d) 2

9. (a) Kolex (b) 10011_2

10. (a) RM495 (b) 13233_4

CHAPTER 3 Logical Reasoning
Penaakulan Logik

1. (a) False/*Palsu* (b) False/*Palsu*
(c) True/*Benar* (d) True/*Benar*
(e) False/*Palsu* (f) True/*Benar*
(g) True/*Benar*

2. (a) Some/*Sebilangan* (b) All/*Semua*
(c) Some/*Sebilangan* (d) All/*Semua*
(e) Some/*Sebilangan* (f) All/*Semua*

3. (a) Implication 1: If a polygon is a pentagon, then the polygon has 5 diagonals.
Implication 2: If a polygon has 5 diagonals, then the polygon is a pentagon.
Implikasi 1: Jika sebuah poligon ialah pentagon, maka poligon itu mempunyai 5 pepenjuru.
Implikasi 2: Jika sebuah poligon mempunyai 5 pepenjuru, maka poligon itu ialah pentagon.

(b) Implication 1: If $a^2 + b^2 = c^2$, then c is a hypotenuse.
Implication 2: If c is a hypotenuse, then $a^2 + b^2 = c^2$.
Implikasi 1: Jika $a^2 + b^2 = c^2$, maka c ialah hipotenus.
Implikasi 2: Jika c ialah hipotenus, maka $a^2 + b^2 = c^2$.

4. (a) $7 + x = 20$ if and only if $x = 13$.
$7 + x = 20$ jika dan hanya jika $x = 13$.
(b) $PQ^2 + QR^2 = PR^2$ if and only if PQR is a right-angled triangle.
$PQ^2 + QR^2 = PR^2$ jika dan hanya jika PQR ialah segi tiga bersudut tegak.
(c) $18 > 10$ if and only if $18 > 13$.
$18 > 10$ jika dan hanya jika $18 > 13$.

5. If $m > 9$, then $m > 14$, False
Jika $m > 9$, maka $m > 14$, Palsu

6. If $p = 15$, then $p + 3 = 18$, True
Jika $p = 15$, maka $p + 3 = 18$, Benar

7. (a) 28 can be divided exactly by 2.
28 boleh dibahagi tepat dengan 2.
(b) $PQRS$ has four sides of equal length.
$PQRS$ mempunyai empat sisi yang sama panjang.
(c) Daniel pass in Mathematics.
Daniel lulus matematik.
(d) If $p + 8 = 26$, then $p = 18$.
Jika $p + 8 = 26$, maka $p = 18$.
(e) $(x + 3)(x - 3) = 0$ if and only if the general form of quadratic equation is $x^2 - 9 = 0$
$(x + 3)(x - 3) = 0$ jika dan hanya jika bentuk am persamaan kuadratik ialah $x^2 - 9 = 0$
(f) $p < 9$
(g) $\cos x° \neq 0.5$/*kos $x° \neq 0.5$*

8. (a) $4n + 7$, $n = 1, 2, 3, \ldots$ (b) $10 + n^2$, $n = 1, 2, 3, \ldots$
(c) $5^n + n$, $n = 1, 2, 3, \ldots$ (d) $n + 17$, $n = 1, 2, 3, \ldots$
(e) $20 + n^2$, $n = 1, 2, 3, \ldots$ (f) $n + n^3$, $n = 1, 2, 3, \ldots$

9. (a) $\pi(7^2)(12)$; 588π@1848 (b) $\frac{(10-2)\times 180°}{10}$; 144°
(c) $\frac{2}{3}\pi(9^3)$; 486π@ $1527\frac{3}{7}$ (d) $(8 - 2) \times 180°$; 1080°
(e) $2n^2$, $n = 1, 2, 3, \ldots$

10. (a) (i) Not statement/*Bukan pernyataan*
(ii) Statement/*Pernyataan*
(b) $PQRST$ has 5 sides./*$PQRST$ mempunyai 5 sisi.*
(c) $5n^2 + 10$, $n = 1, 2, 3, \ldots$

11. (a) 81 is a perfect square or 81 is a prime number.
81 ialah nombor kuasa dua sempurna atau 81 ialah nombor perdana.
(b) $x^2 + 5 \neq 21$
(c) $8n^2 - 17$, $n = 1, 2, 3, \ldots$

12. (a) (i) False/*Palsu* (ii) True/*Benar*
(b) $3x^2 + 5 \neq 19$
(c) $n^2 - 3(6 + n)$, $n = 1, 2, 3, \ldots$

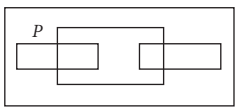
13. (a) (i) True/*Benar* (ii) False/*Palsu*
(b) Implication 1: Jika $(-T)^3$, maka $T = -5$.
Implication 2: Jika $T = -5$, maka $(-T)^3$.
Implikasi 1 : Jika $(-T)^3$, maka $T = -5$.
Implikasi 2 : Jika $T = -5$, maka $(-T)^3$.
(c) $PQRST$ has 8 sides./*$PQRST$ mempunyai 8 sisi.*

CHAPTER 4 Operations on Sets
Operasi Set

1. 22 **2.** 3

3. (a) False/*Palsu* (b) $R \cap Q \cup P'$

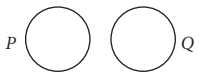
4. (a) ξ



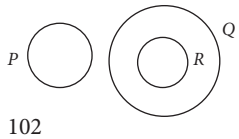
(b) 27
(c) 29

5. (a) $P \subset Q$

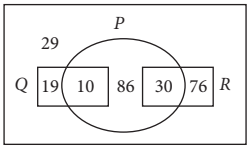
(b) (i)



(ii)

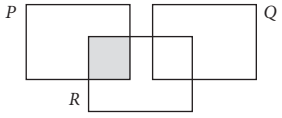


6. (a)

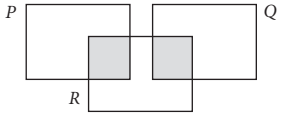


(b) 102

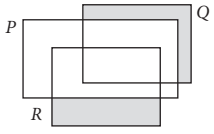
7. (a) (i) $P \cap R$



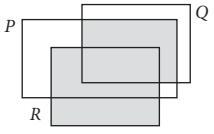
(ii) $P \cup Q \cap R$



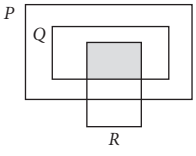
(b) (i) P'



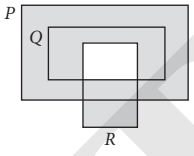
(ii) $P \cap Q \cup R$



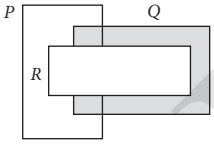
(c) (i) $Q \cap R$



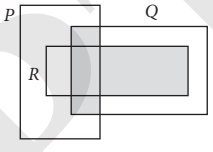
(ii) $(Q \cap R') \cup (P \cap Q)'$



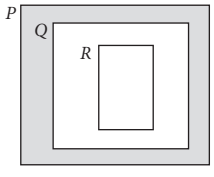
(d) (i) $Q \cap R'$



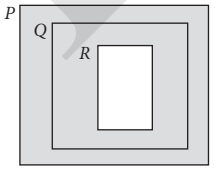
(ii) $Q \cap (P \cup R)$



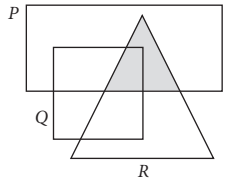
(e) (i) $P \cap Q'$



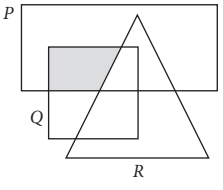
(ii) $(Q \cap R') \cup (P \cap Q')$



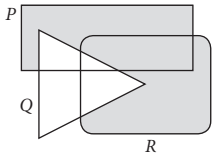
(f) (i) $P \cap R$



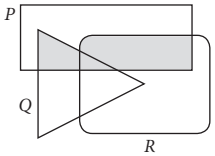
(ii) $(Q \cap R)' \cap P$



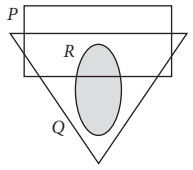
(g) (i) Q'



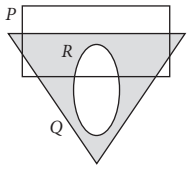
(ii) $(Q \cup R) \cap P'$



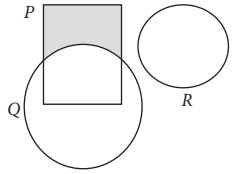
(h) (i) $Q \cap R$



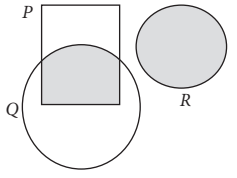
(ii) $P \cup R' \cap Q$



(i) (i) $Q' \cap P$

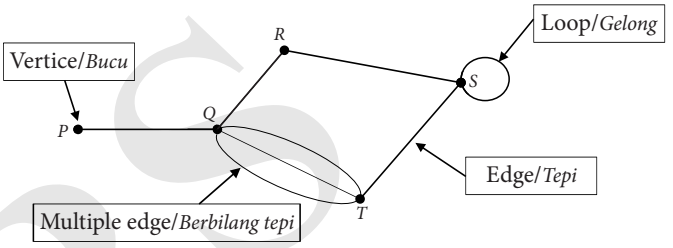


(ii) $P \cap Q \cup R$



CHAPTER 5 Network in Graph Theory
Teori dalam Rangkaian Graf

1.



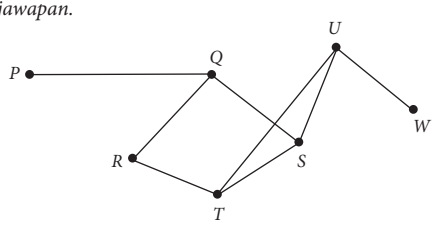
2. (a) *F*, *G*, *H*, *J*, *K*, *L*, *M*

(b) (*F*, *G*), (*G*, *M*), (*G*, *K*), (*G*, *H*), (*H*, *J*), (*J*, *J*), (*J*, *K*), (*J*, *K*), (*K*, *L*), (*L*, *M*), (L, *M*), (*L*, *M*)

(c) 24

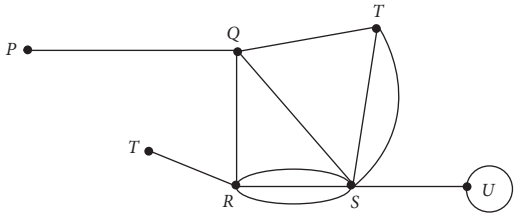
3. *Other suitable answers and fulfill the terms can be accepted. This is only sample answer

**Jawapan lain yang setara dan memenuhi syarat diterima. Ini hanya contoh jawapan.*



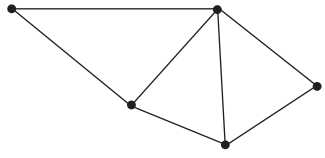
4. *Other suitable answers and fulfill the terms can be accepted. This is only sample answer

**Jawapan lain yang setara dan memenuhi syarat diterima. Ini hanya contoh jawapan.*

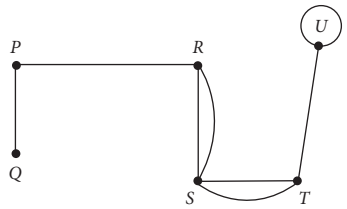


5. *Other suitable answers and fulfill the terms can be accepted. This is only sample answer

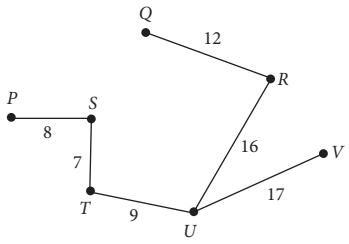
**Jawapan lain yang setara dan memenuhi syarat diterima. Ini hanya contoh jawapan.*



6. *Other suitable answers and fulfill the terms can be accepted. This is only sample answer
**Jawapan lain yang setara dan memenuhi syarat diterima. Ini hanya contoh jawapan.*

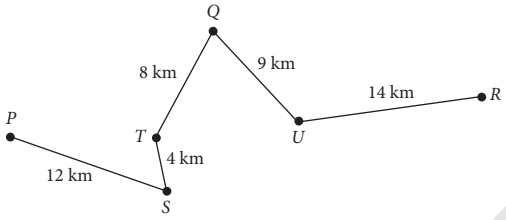


7.



8. (a) $d_{in}(P) = 1$ $d_{out}(P) = 0$
(b) $d_{in}(Q) = 1$ $d_{out}(Q) = 2$
(c) $d_{in}(S) = 2$ $d_{out}(S) = 2$
(d) $d_{in}(U) = 3$ $d_{out}(U) = 2$

9. (a)



(b) 3 hours 17 minutes/*3 jam 17 minit*

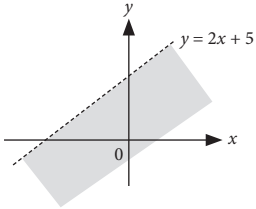
10. (a) $U \xrightarrow{124\text{ min}} P \xrightarrow{54\text{ min}} Q \xrightarrow{60\text{ min}} R$; 75 kmh^{-1}/*75 kmj^{-1}*
(b) (i) 9.41 morning/*pagi*
(ii) 315.25 km

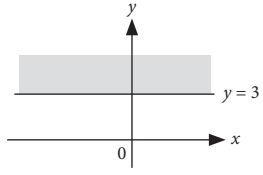
CHAPTER 6 Linear Inequalities in Two Variables
Ketaksamaan Linear dalam Dua Pemboleh Ubah

1.

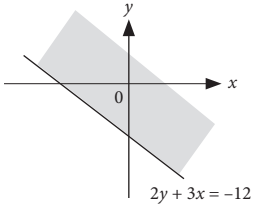
	P	*Q*	*R*	*S*
$y \leqslant -12$				✓
$y > x - 12$	✓			
$y \leqslant x - 12$		✓	✓	✓
$x > 12$			✓	

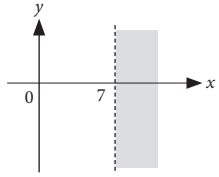
2. (a) $y < 2x + 5$ (b) $y \geqslant 3$





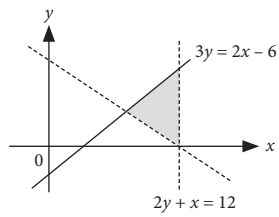
(c) $2y + 3x \geqslant -12$ (d) $x > 7$



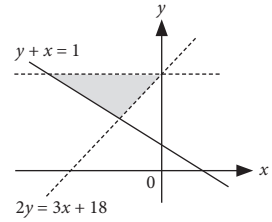


3. (a) $x \geqslant -6$ (b) $y < 5$
(c) $y \geqslant \frac{3}{4}x + \frac{18}{4}$ @ $4y = 3x + 18$

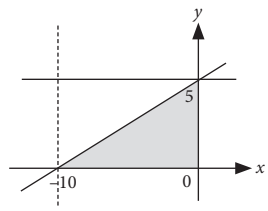
4.



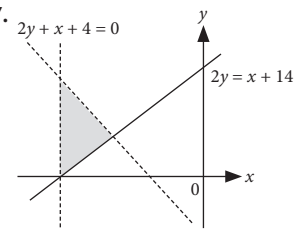
5.



6.



7.



8. (a) $6y > 5x - 30$ (b) $y \leqslant 8$
(c) $x \geqslant 6$

9. (a) $y + x \geqslant 8$ (b) $2y - 3x \geqslant -6$
(c) $y \leqslant 8$

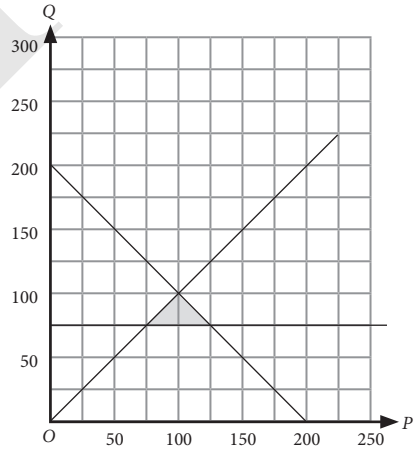
10. (a) $2y \geqslant 3x - 12$ (b) $y + 3x + 8 \leqslant 0$
(c) $x > -4$

11. (a) $x + y \geqslant 60$ (b) $x \leqslant 2y$
(c) $5x + 12y \leqslant 930$

12. (a)

$x + y$	$\leqslant$	200
x	$\leqslant$	y
y	$\geqslant$	x

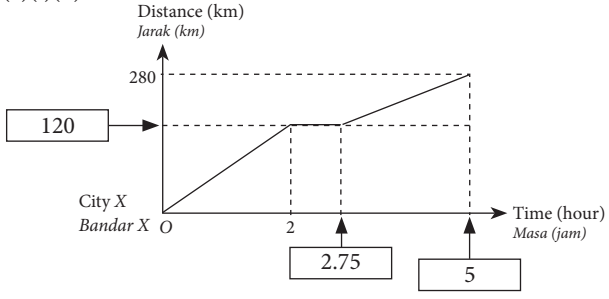
(b)



(c) (i) 100;
(ii) Minimum/*Minimum* = 75, Maximum/*Maksimum* = 125

CHAPTER 7 Graphs of Motion
Graf Gerakan

1. (a)(i)(ii)



(b) 56 kmh^{-1}/*56 kmj^{-1}*

2. (a) 20 kmh^{-2}/*20 kmj^{-2}* (b) 49.75 km
3. (a) 54 minutes/*minit* (b) 233
(c) 70 kmh^{-1}/*70 kmj^{-1}*
4. (a) 0.5 hour/*jam* (b) 95
(c) 81.43 kmh^{-1}/*81.43 kmj^{-1}*
5. (a) 80 kmh^{-1}/*80 kmj^{-1}* (b) 90 km
(c) 1.25
6. (a) 60 minutes/*minit* (b) 50 kmh^{-1}/*50 kmj^{-1}*
(c) 50
7. (a) 70 kmh^{-1}/*70 kmj^{-1}* (b) 20 kmh^{-2}/*20 kmj^{-2}*
(c) 180
8. (a) 1.75 hours/*jam* (b) 308.75 km
(c) 2
9. (a) 20 (b) 40
10. (a) 30 (b) 1.30 p.m./*petang*
(c) 217.5 (d) 72.5
(e) 10.36
11. (a) RM1 532.50 (b) 480
(c) RM980 (proven, more RM20 from the target) *(terbukti, lebih RM20 dari sasaran)*

CHAPTER 8 Measures of Dispersion for Ungrouped Data
Sukatan Serakan Data Tidak Terkumpul

1. (a) 61 – 67 (b) 63
(c) 66.53
2. (a) 60 (b) 50
(c) 50.5
3. (a) 27 (b) 35.4
(c) 20
4. (a)

	Range of score *Julat antara skor*	Mean score *Min skor*
Archer X ***Pemanah X***	6	7.67
Archer *Y* ***Pemanah Y***	3	9

(b) Archer *Y* was selected because he was more consistant in shotting.
Pemanah Y dipilih kerana lebih konsisten dalam bidikan.

5.

Arrange the data in ascending order:
Susun data secara tertib menaik:
26 29 38 43 49 51 64

Quartile *Kuartil* 1	Median *Median*	Quartile *Kuartil* 3	Interquartile range *Julat antara kuartil*
29	43	51	22

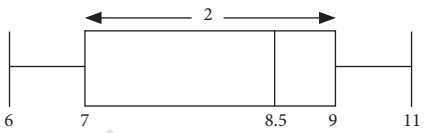
6. Quartile 1/*Kuartil 1*: 16.5
Median/*Median : 30*
Quartile 3/*Kuartil 3*: 415
Interquartile range/*Julat antara kuartil: 25*

7.

Variance *Varians*	σ	$\frac{\Sigma x^2}{N} - (\bar{x})^2$ @ $\frac{\Sigma(x-\bar{x})^2}{N}$
Standard deviation *Sisihan piawai*	σ^2	$\sqrt{\frac{\Sigma x^2}{N} - (\bar{x})^2}$ @ $\sqrt{\frac{\Sigma(x-\bar{x})^2}{N}}$

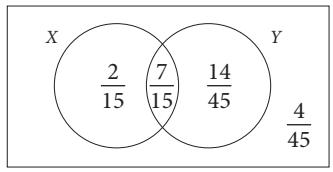
8. (a) (i) 22 (ii) 132
(iii) 11.48
(b) Standard deviation is the best to be used in explain the data above because there is a big diffetence between the first winner and seventh winner.
Sisihan piawai paling baik dalam menerangkan data di atas kerana terdapat perbezaan agak besar antara pemenang tempat pertama dengan tempat ke-7.

9. (a) Q_1 = Quartile 1/*Kuartil 1*
Q_2 = Median/*Median*
Q_3 = Quartile 3/*Kuartil 3*
P = Interquartile range/*Julat antara kuartil*
(b) Symmetry, negative skew/*Simetri, pencong negatif*
(c) Data centre/*Pusat data*
(d) Length of box/*Panjang kotak*
(e) All data/*Semua data*
10. (a) 6, 6, 6, 7, 7, 7, 8, 8, 8, 9, 9, 9, 9, 10, 10, 11, 11
(b) (i) Mode/*Mod* [✓] 9 [ ] 10
(ii) Quartile 1/*Kuartil* 1 [✓] 7 [ ] 7.5
(iii) Median/*Median* [ ] 8 [✓] 8.5
(iv) Quartile 3/*Kuartil 3* [✓] 9 [ ] 9.5
(v) Interquartile range/*Julat antara kuartil* [ ] 3 [✓] 2
(c)

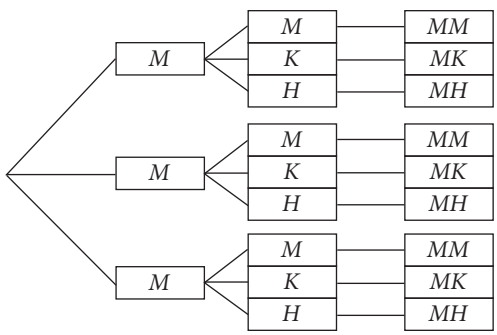


CHAPTER 9 Probability of Combined Events
Kebarangkalian Peristiwa Bergabung

1. {*AD, AE, AF, BD, BE, BF, CD, CE, CF*}
2. {*AB, AC, AD, AE, AF, BC, BD, BE, BF, CD, CE, CF, DE, DF, EF*}
3. {*AB, AC, AD, AE, AF, BA, BC, BD, BE, BF, CA, CB, CD, CE, CF, DA, DB, DC, DE, DF, EA, EB, EC, ED, EF, FA, FB, FC, FD, FE*}
4. {*AB, AC, AD, AE, AF, BC, BD, BE, BF, CD, CE, CF, DE, DF, EF*}
5. (a) {*CC, CO, CV, CI, CD, OC, OO, OV, OI, OD, VC, VO, VV, VI, VD, IC, IO, IV, II, ID, DC, DO, DV, DI, DD*}
(b) (i) *VI, VO*; $\frac{2}{25}$
(ii) *IC, IO, IV, II, ID, CD, OD, VD, DD*; $\frac{9}{25}$
6. (a) {*SP, SM, S2, S0, S2, S1, PS, PM, P2, P0, P2, P1, MS, MP, M2, M0, M2, M1, 2S, 2P, 2M*, 20, 22, 21, 0*S*, 0*P*, 0*M*, 02, 02, 01, 2*S*, 2*P*, 2*M*, 20, 22, 21, 1*S*, 1*P*, 1*M*, 12, 10, 12}
(b) (i) *P*1; $\frac{1}{42}$
(ii) *M2, M2*; $\frac{1}{21}$
(iii) *SP, SM, PS, PM, MS, MP,* 20, 22, 21, 02, 02, 01, 20, 22, 21, 12, 10, 12 ; $\frac{3}{7}$
7. (a) ξ



(b) $\frac{7}{15}$ (c) $\frac{2}{15}$ (d) $\frac{4}{9}$
8. (a)



(b) (i) $\frac{1}{22}$ (ii) $\frac{47}{66}$

9. (a) {36, 31, 35, 39, 63, 61, 65, 69, 13, 15, 16, 19, 53, 56, 51, 59, 93, 91, 95, 96}

(b) (i) 93, 95; $\frac{1}{10}$

(ii) 36, 63, 61, 65, 69, 16, 56, 96; $\frac{2}{5}$

10. (a) {*QQ, Q7, QX, Q5, QU, 7Q, 77, 7X, 75, 7U, XQ, X7, XX, X5, XU, 5Q, 57, 5X, 55, 5U, UQ, U7, UX, U5, UU*}

(b) (i) *Q7, Q5, X7, X5*; $\frac{4}{25}$

(ii) *QQ, QX, QU, 77, 75, XQ, XX, XU, 57, 55, UQ, UX, UU*; $\frac{13}{25}$

11. (a) {*hh, hS, hU,he, hF, Sh, SU, Se, SF, Uh, US, Ue, UF, eh, eS, eU, ee, eF, Fh, FS, FU, Fe*}

(b) (i) *Sh*; $\frac{1}{22}$

(ii) *hS, hU, hF, Sh, Se, Uh, Ue, eS, eU, eF, Fh, Fe*; $\frac{6}{11}$

12. (a) $\frac{2}{5}$ (b) $\frac{13}{28}$

13. (a) $\frac{4}{15}$ (b) $\frac{13}{28}$

14. (a) {43, 46, 47, 53, 56, 57, 23, 26, 27, 93, 96, 97, 13, 16, 17}

(b) (i) 56, 96, 16; $\frac{1}{5}$

(ii) 43, 47, 53, 23, 97, 13, 17, 16; $\frac{8}{15}$

15. (a) {31, 32, 37, 38, 51, 52, 57, 58, 91, 92, 97, 98, 41, 42, 47, 48}

(b) (i) 41, 47; $\frac{1}{8}$

(ii) 91, 92, 97, 98, 32, 52, 42; $\frac{7}{16}$

16. (a) {*VQ, V4, V3, V2, VV, DQ, D4, D3, D2, DD, 6Q*, 64, 63, 62, 66}

(b) (i) 66; $\frac{1}{16}$

(ii) *V4, V3, V2, D4, D3, D2, 6Q*; $\frac{7}{16}$

17. (a) {*P3, PE, P9, PG, 4P, 4K, K3, KE, K9, KG*}

(b) (i) *4P, 4K*; $\frac{1}{5}$ (ii) *K3, KE, K9, KG, P9*; $\frac{1}{2}$

CHAPTER 10 Consumer Mathematics: Financial Management
Matematik Pengguna: Pengurusan Kewangan

1. (a) Setting goals/*Menetapkan matlamat kewangan*
(b) Evaluating financial status/*Menilai kedudukan kewangan*
(c) Creating financial plan/*Mewujudkan pelan kewangan*
(d) Carrying out financial plan/*Melaksanakan pelan kewangan*
(e) Reviewing and revising the progress
Mengkaji semula dan menyemak kemajuan

2. (a) Short-term financial goals/*Matlamat jangka pendek*
(b) Long-term financial goals/*Matlamat jangka panjang*
(c) Medium-term financial goals/*Matlamat jangka sederhana*

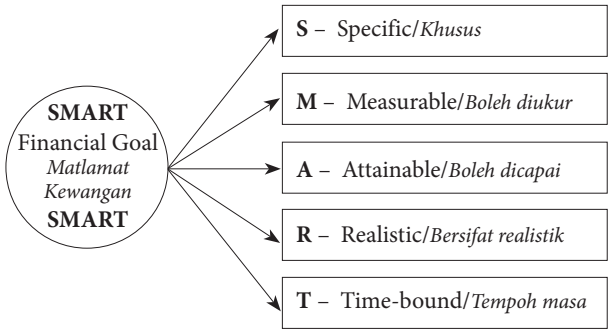
3. Short-term duration/*Tempoh masa jangka pendek*

Short-term goals *Matlamat jangka pendek*	**Long-term goals** *Matlamat jangka panjang*
Take less than a year *Mengambil masa kurang daripada setahun*	Take more than 5 years *Mengambil masa lebih 5 tahun*
Involve a small amount of money *Melibatkan amaun yang kecil*	Involve a large amount of money *Melibatkan amaun yang besar*

4. *Any relevant examples are accepted
Sebarang contoh yang relevan diterima

Short-term goals *Matlamat jangka pendek*	**Long-term goals** *Matlamat jangka panjang*
Purchasing a cell phone *Membeli telefon bimbit*	Purchasing a house *Membeli rumah*
Go on vacation abroad *Bercuti ke luar negara*	Savings for retirement *Simpanan untuk persaraan*

5.



6. *Any of the following 3 steps are accepted.
Mana-mana 3 langkah berikut sahaja diterima.

1. Define the short-term and long-term goals.
Menentukan matlamat jangka pendek dan jangka panjang.
2. Make an initial budget to achieve each goal.
Membuat anggaran awal untuk mencapai setiap matlamat.
3. Calculate monthly savings needed to achieve the short-term and long-term goals.
Mengira simpanan bulanan yang diperlukan untuk mencapai matlamat jangka pendek dan jangka panjang.
4. Analyse spending behaviour.
Menganalisis tabiat perbelanjaan.
5. Set a time frame to achieve each goal.
Menetapkan tempoh masa untuk mencapai setiap matlamat tersebut.
6. Determine income strategies that will help to achieve the financial goals.
Menentukan strategi pendapatan yang akan membantu mencapai matlamat kewangan.

7. (a) RM1 000, positive cash flow/*aliran tunai positif*
(b) –RM200, negative cash flow/*aliran tunai negatif*

8. (a) Smart because the actual expenses are less than the budget.
Bijak kerana perbelanjaan sebenar kurang daripada anggaran.
(b) (i) RM750
(ii) M – He/She knows the amount of money needed to be saved each month, which is RM750.
Dia mengetahui jumlah wang yang perlu disimpan setiap bulan iaitu RM750.
T – He/She has targeted time frame, which is 8 months.
Dia mempunyai tempoh masa sasaran iaitu 8 bulan.
(iii) *Any relevant examples are accepted
Sebarang contoh yang relevan diterima
- Reduce electrical and water usage (utility bills)
Mengurangkan penggunaan elektrik dan air (bil utiliti)
- Use public transportation to reduce toll and petrol expenses
Menggunakan pengangkutan awam untuk mengurangkan perbelanjaan tol dan petrol
- Reduce groceries shopping
Mengurangkan perbelanjaan barang dapur
- Cancel end-of-year vacation plan
Membatalkan rancangan untuk bercuti di hujung tahun
- Find side income
Mencari pendapatan sampingan

9. (a) Positive cash flow/*Aliran tunai positif*

(b) RM1 083.30

(c) Not really wise because/*Kurang bijak kerana*

- Cash surplus has not been deducted yet with variable expenses
  Lebihan tunai masih belum ditolak dengan perbelanjaan tidak tetap
- House monthly instalment is higher and burdensome in the future
  Bayaran balik bulanan rumah adalah tinggi dan membebankan pada masa hadapan.

10. (a)

	Financial plan (RM) *Pelan kewangan* (RM)	
Net salary/*Gaji bersih* Passive income (commission and rental) *Pendapatan pasif (komisen dan sewaan)*	4 750 2 000	
Total monthly income *Jumlah pendapatan bulanan*		6 750
Minus monthly savings *Tolak simpanan tetap bulanan* (10% of monthly income) *(10% daripada pendapatan bulanan)* Minus savings for emergency fund *Tolak simpanan kecemasan*	475 100	
Income balance/*Baki pendapatan*		6 175
Minus monthly fixed expenses ***Tolak perbelanjaan tetap bulanan*** House rentals (First and second houses) *Sewaan rumah (rumah pertama dan kedua)* Insurance premiums/*Premium insuran*	 3 400 120	
Total monthly fixed expenses *Jumlah perbelanjaan tetap bulanan*		3 520
Minus monthly variable expenses ***Tolak jumlah perbelanjaan tidak tetap bulanan*** Home utilities/*Utiliti rumah* Petrol and toll expenses *Belanja petrol dan tol* Groceries/*Barangan dapur* Allowances for parents *Pemberian saguhati kepada ibubapa* Newspapers, magazines and sports equipment *Majalah, akhbar dan peralatan sukan* Fine dining/*Makan di restoran terkenal*	 350 300 900 300 150 180	
Total variable expenses *Jumlah perbelanjaan tidak tetap*		2 180
Surplus of income/deficit *Pendapatan lebihan / kurangan*		475

(b) Encik Lee Wei has a surplus of RM475.
Encik Lee Wei mempunyai lebihan tunai sebanyak RM475.

(c) Encik Lee Wei cannot achieve his goal because he has to save a total of RM1 200 a month, while his saving is only RM1 050 (10% of the net salary, RM100 from emergency saving and a surplus of RM475).
Encik Lee Wei tidak mampu mencapai matlamat beliau kerana beliau perlu menyimpan sejumlah RM1 200 sebulan, sedangkan simpanan beliau hanya RM1 050 (10% daripada gaji bersih, RM100 daripada simpanan kecemasan dan RM475 lebihan tunai)

11. (a) *X* – RM250; *Y* = RM750

(b) Reduce ASB investment by RM250.
Mengurangkan pelaburan ASB sebanyak RM250.

(c)

Income/*Pendapatan*		**Expenditure/*Perbelanjaan***	
Items/*Barang*	**RM**	**Items/*Barang***	**RM**
Salary/*Gaji*	1 575	House rental *Sewa rumah*	650
Allowances/*Elaun*	700	Car loan instalment *Ansuran kereta*	500
Overtime pay *Bayaran lebih masa*	625	Utility Bills *Bil utiliti*	285
Bonus and others *Bonus dan lain-lain*	265	Groceries *Belanja dapur*	805
		Insurance *Insurans*	175
		ASB savings *Simpanan ASB*	750
Total at the end of the month *Jumlah akhir bulan*	3 165		3 165

(d) Encik Joseph cannot achieve his goal because the monthly instalment is quite high, which is RM1 458.33 per month. It is more than his surplus of income (ASB investment), which is RM750. Other than that, the duration of 30 years is quite long and might be influenced by his health condition and pension.
Encik Joseph tidak mampu mencapai matlamat tersebut kerana bayaran ansuran bulanannya agak tinggi iaitu RM1 458.33 sebulan. Jumlah ini melebihi pendapatan lebihannya (pelaburan ASB) iaitu RM750. Selain itu, tempoh masa 30 tahun adalah agak panjang dan mungkin dipengaruhi oleh keadaan kesihatan dan pencen beliau.

FORM 5

CHAPTER 1 Variation
Ubahan

1. (a) $P = kQ$ (b) $R = kS$
(c) $T = kU$ (d) $V = kW$
(e) $X = kY$

2. (a) $x = 7y$ (b) $x = \frac{3}{2}y^2$

3. (a) $x = \frac{1}{5}V$ (b) 30 cm

4. (a) 80 (b) 261

5. $P = 160$, $Q = 14$

6. $x = \frac{y^2z}{25}$

7. $x = \frac{50}{y^2}$

8. (a) 24 (b) 11

9. (a) $L \propto xy$ (b) 45 cm^2

10. (a) $S = \frac{90}{T}$ (b) $\frac{9}{10}$ or/*atau* 0.9

11. (a) $V = \frac{22}{7}j^2h$ (b) 25
(c) 21

12. (a) $x \propto \frac{y}{p}$ (b) $y \propto \frac{x}{p}$
(c) $p \propto \frac{x}{y}$

13. (a) $E = -2FG$ (b) $G = \frac{30}{HJ}$
(c) $S = \frac{10T}{U}$ (d) $V = \frac{15W}{2X}$
(e) $X = \frac{80Y}{Z}$

14. 24

15. (a) RM33.33 (b) RM20
(c) 12

CHAPTER 2 Matrices
Matriks

1. $b = 2$, $d = 4$

2. $f = 3$, $g = -2$

3. $m = 6$, $n = 4$

4. $p = -3$, $q = -2$

5. $x = 1$, $y = -3$

6. Price of a pen/ *Harga sebatang pen*: RM8.50
Price of a book/ *Harga sebuah buku*: RM4.50

7. Number of cows = 15
Bilangan lembu: 15
Number of ducks = 115
Bilangan itik: 115

8. (a) $6p + 2q = 86$
$p + q = 19$
(b) Price of an adult ticket: RM12
Harga tiket dewasa: RM12
Price of a children ticket: RM7
Harga tiket kanak-kanak: RM7

9. (a) $\begin{pmatrix} -2 & -1 \\ \frac{5}{4} & \frac{3}{4} \end{pmatrix}$ (b) $x = 2$, $y = 3$

10. (a) $m = -2$, $n = 1$ (b) $m = -4$, $n = 3$

11. (a) $m = -\frac{1}{2}$, $n = 3$ (b) $u = -3$, $v = -2$

12. (a) $\begin{pmatrix} 2 & 1 \\ -\frac{3}{4} & -\frac{1}{2} \end{pmatrix}$ (b) $x = 3$, $y = -2$

13. (a) 14 (b) $x = 1.5$, $y = -2$

14. Price of a shirt/*Harga sehelai kemeja*, p: RM65
Price of a pants/*Harga sehelai seluar*, q: RM90

15. (a) $x = 8$, $y = -3$
(b) Theta group/ *Kumpulan Theta*

CHAPTER 3 Consumer Mathematics: Insurance
Matematik Pengguna: Insurans

1. (a) Premium rate/*Kadar premium* = RM3.24
Annually premium/*Premium tahunan*
$= \frac{\text{RM250 000}}{\text{RM1 000}} \times \text{RM3.24}$
= RM810
(b) Premium rate/*Kadar premium* = RM3.17
Annually premium/*Premium tahunan*
$= \frac{\text{RM250 000}}{\text{RM1 000}} \times \text{RM3.17}$
= RM792.50

2. Comprehensive policy:
Polisi komprehensif:

Rate for the first RM1 000 *Kadar untuk RM1 000 yang pertama*	RM266.50
Balance to be insured *Baki yang perlu diinsuranskan*	RM20.30 × RM69 = RM1 400.70
Basic premium *Premium asas*	RM266.50 + RM1 400.70 = RM1 667.20
NCD 55%	0.55 × RM1 667.20 = RM916.96
Gross premium *Premium kasar*	RM1 667.20 – RM916.96 = RM750.24

Third party, fire and theft policy:
Polisi pihak ketiga, kebakaran dan kecurian:

Basic premium *Premium asas*	0.75 × RM1 667.20 = RM1 250.40
NCD 55%	0.55 × RM1 250.40 = RM687.72
Gross premium *Premium kasar*	RM1 250.40 – RM687.72 = RM562.68

Third party policy:
Polisi pihak ketiga:

Basic premium *Premium asas*	RM93.60
NCD 55%	0.55 × RM93.60 = RM51.48
Gross premium *Premium kasar*	RM93.60 – RM51.48 = RM42.12

3.

Lorry *Lori*	Loss *Kerugian* (RM)	Can make a claim? *Boleh membuat tuntutan?*	Compensation *Pampasan* (RM)
A	780	*No/Tidak*	*None/Tiada*
B	1 000	*Yes/Ya*	1 000 – 940 = 60
C	2 370	*Yes/Ya*	2 370 – 940 = 1 430

4. Percentage of co-insurance to be borne
Peratusan ko-insurans yang perlu ditanggung
$= \frac{\text{RM2 200}}{\text{RM11 000}} \times 100\%$
= 20%
Peratusan ko-insurans bagi polisi insurans itu ialah 80/20.
The percentage of co-insurance of the insurance policy is 80/20.

5. Total insurance need to be bought/*Jumlah insurans yang perlu dibeli*

$= \frac{80}{100} \times$ RM400 000
= RM320 000

The sum insured, which is RM300 000 is less than the total insurance needs to be bought.
Jumlah yang diinsuranskan, iaitu RM300 000 adalah kurang daripada jumlah insurans yang perlu dibeli.

Compensation/*Bayaran pampasan*

$= \frac{\text{RM300 000}}{\text{RM320 000}} \times$ RM90 000
= RM84 375

6. Total insurance to be bought/*Jumlah insurans yang perlu dibeli*

$= \frac{80}{100} \times$ RM500 000
= RM400 000

Compensation obtained with deductible
Pampasan yang diterima dengan deduktibel
= RM95 000 + RM8 000
= RM103 000 (< RM130 000)

$\frac{\text{Total insurance he bought}}{\text{RM400 000}}$ *Jumlah insurans yang telah dibeli* × RM130 000 – RM8 000
= RM95 000

Total insurance he bought/*Jumlah insurans yang telah dibeli*
= RM316 923.08

CHAPTER 4 Consumer Mathematics: Taxation
Matematik Pengguna: Percukaian

1. (a) Chargeable income/*Pendapatan bercukai*
= RM114 000 – RM14 400 – (RM500 + RM9 000 + RM2 100 + RM2 500 + RM5 500)
= RM80 000

(b) Puan Hasmah's chargeable income, lies in the range of chargeable income as below:
Pendapatan bercukai Puan Hasmah terletak pada banjaran pendapatan bercukai seperti di bawah.

Chargeable income *Banjaran pendapatan bercukai* **(RM)**	**Calculations** *Pengiraan* **(RM)**	**Rate** *Kadar* **(%)**	**Tax** *Cukai* **(RM)**
70 001 – 100 000	On the first 70 000 *70 000 pertama*		4 600
	Next 30 000 *30 000 berikutnya*	21	6 300

Tax on the first RM70 000/*Cukai bagi RM70 000 yang pertama*
= RM4 600

Tax on the next balance/*Cukai atas baki berikutnya*
= (RM80 000 – RM70 000) × 21%
= RM10 000 × 21%
= RM2 100

Income tax payable/*Cukai pendapatan yang perlu dibayar*
= RM4 600 + RM2 100
= RM6 700

2. Annual assessment tax/*Cukai pintu tahunan*
= RM1 200 × 12 × 8.7%
= RM1 252.80

3. Quit rent for the house with area of 140 m^2
Cukai tanah untuk rumah dengan keluasan 140 m^2
= RM0.51 × 140
= RM71.40

Quit rent for the house with area of 102 m^2
Cukai tanah untuk rumah dengan keluasan 102 m^2
= RM0.51 × 102
= RM52.02

Total quit rent/*Jumlah cukai tanah*
= RM71.40 + RM52.02
= RM123.42

4. Service tax/*Cukai perkhidmatan*
= RM188 × 4 × 6%
= RM45.12

5. Service tax/*Cukai perkhidmatan*
= RM0.546 × (750 – 600) × 6%
= RM4.91

6. Let the estimation of monthly rental be x.
Biarkan anggaran sewa bulanan rumah tersebut sebagai x.

$x \times 12 \times 4.5\% =$ RM729

$$x = \frac{\text{RM729}}{12 \times 4.5\%}$$

$x =$ RM1 350

Thus, the estimation of monthly rental is RM1 350.
Maka, anggaran sewa bulanan ialah RM1 350.

7. (a) Chargeable income/*Pendapatan bercukai*
= RM68 800 – RM500 – (RM9 000 + RM5 800 + RM2 500 + RM1 400 + RM1 200)
= RM48 400

(b) Siti's chargeable income lies in the range of chargeable income as below:
Pendapatan bercukai Siti terletak pada banjaran pendapatan bercukai seperti di bawah:

Chargeable income *Banjaran pendapatan bercukai* **(RM)**	**Calculations** *Pengiraan* **(RM)**	**Rate** *Kadar* **(%)**	**Tax** *Cukai* **(RM)**
35 001 – 50 000	On the first 35 000 *35 000 pertama*		600
	Next 15 000 *15 000 berikutnya*	8	1 200

Income tax/*Cukai pendapatan*
= [RM600 + (RM48 400 – RM35 000) × 8%] – RM400
= RM1 672 – RM400
= RM1 272

(c) Total PCB paid/ *Jumlah PCB yang dibayar*
= RM250 × 12
= RM3 000 (> RM1 272)

Siti will receive the excess income tax payment as the amount of PCB is more than the income tax imposed.
Siti akan menerima lebihan bayaran cukai pendapatan memandangkan jumlah PCB yang adalah melebihi cukai pendapatan yang dikenakan.

CHAPTER 5 Congruency, Enlargement and Combined Transformations
Kekongruenan, Pembesaran dan Gabungan Transformasi

1. (a) (i) (7, 4) (ii) (7, 0)

(b) (i) (a) **X** is a clockwise rotation of 90° about the centre (6, 1)
X *ialah putaran 90° arah jam pada pusat (6, 1)*

(b) **Y** is an enlargement about the centre (7, 8) with the scale factor of 3
Y *ialah pembesaran pada pusat (7, 8) dengan faktor skala 3*

(ii) 320 cm^2

2. (a) (i) (–11, 4) (ii) (–6, 8)

(b) (i) (a) **X** is an enlargement about centre (–8, 12) with a scale factor of $\frac{1}{3}$
X *ialah pembesaran pada pusat (–8, 12) dengan faktor skala* $\frac{1}{3}$

(b) **Y** is a rotation of 180° about the centre (–8, 7)
Y *ialah putaran 180° pada pusat (–8, 7)*

(ii) 35 cm^2

3. (a) (i) (7, 5) (ii) (–3, 7)

(b) (i) **U** is a clockwise rotation of 90° about the centre (8, 9)
U *ialah putaran 90° arah jam pada pusat (8, 9)*

(ii) **V** is an enlargement about centre (7, 3) with a scale factor of 2
V *ialah pembesaran pada pusat (7, 3) dengan faktor skala 2*

(c) 36 cm²

4. (a) (i) (4, 3) (ii) (8, –1)

(b) (i) (a) **X** is a rotation of 180° about the centre (4, 5)
X *ialah putaran 180° pada pusat (4, 5)*

(b) **Y** is an enlargement about centre (9, 5) with a scale factor of 3
Y *ialah pembesaran pada pusat (9, 5) dengan faktor skala 3*

(c) 200 cm²

5. (a) (i) (9, 2) (ii) (7, 5)

(b) (i) (a) **X** is an enlargement about centre (8, 5) with a scale factor of $\frac{1}{3}$
X *ialah pembesaran pada pusat (8, 5) dengan faktor skala* $\frac{1}{3}$

(b) **Y** is an anticlockwise rotation of 90° about the centre (9, 3)
Y *ialah putaran 90° lawan arah jam pada pusat (9, 3)*

(c) 320 cm²

6. (a) (i) (3, 2) (ii) (9, 0)

(b) (i) (a) **X** is an enlargement about centre (4, 4) with a scale factor of $\frac{1}{2}$
X *ialah pembesaran pada pusat (4, 4) dengan faktor skala* $\frac{1}{2}$

(b) **Y** is an anticlockwise rotation of 90° about the centre (5, 7)
Y *ialah putaran 90° lawan arah jam pada pusat (5, 7)*

(c) 105 cm²

7. (a) (i) (2, –1) (ii) (2, 1)

(b) (i) (a) **X** is a translation $\begin{pmatrix} -3 \\ -3 \end{pmatrix}$
X *ialah translasi* $\begin{pmatrix} -3 \\ -3 \end{pmatrix}$

(ii) **V** is an enlargement about the centre (5, 4) with a scale factor of 2
V *ialah pembesaran pada pusat (5, 4) dengan faktor skala 2*

(c) 150 cm²

8. (a) (i) (2, 6) (ii) (1, 2)

(b) (i) (a) **X** is a clockwise rotation of 90° about the centre (4, 3)
X *ialah putaran 90° arah jam pada pusat (4, 3)*

(b) **Y** is an enlargement about the centre (4, 2) with the factor scale of 2
Y *ialah pembesaran pada pusat (4, 2) dengan faktor skala 2*

(c) 45 cm²

9. (a) (i) (8, 1) (ii) (6, 5)

(b) (i) (a) **X** is an enlargement about centre (2, 5) with a scale factor of $\frac{1}{3}$
X *ialah pembesaran pada pusat (2, 5) dengan faktor skala* $\frac{1}{3}$

(b) **Y** is a clockwise rotation of 90° about the centre (5, 4)
Y *ialah putaran 90° arah jam pada pusat (5, 4)*

(c) 189 cm²

CHAPTER 6 Ratios and Graphs of Trigonometric Functions
Nisbah dan Graf Fungsi Trigonometri

1. (a) 122° lies in quadrant II.
122° terletak dalam sukuan II.
$\sin \theta = \sin (180° - \theta°)$
$\sin 122° = \sin (180° - 122°)$
$= \sin 58°$
$= 0.8480$

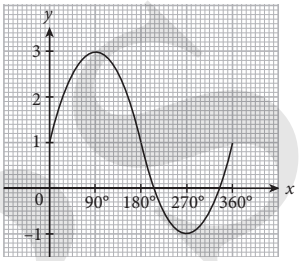
(b) 96° 54′ lies in quadrant II
96° 54′ terletak dalam sukuan II
$\cos \theta = -\cos (180° - \theta°)$
$\sin 122° = -\cos (180° - 96° 54')$
$= -\cos 83° 6'$
$= -0.1201$

(c) 222° lies in quadrant III
222° terletak dalam sukuan III
$\tan \theta = \tan (\theta° - 180°)$
$\tan 222° = \tan (222° - 180°)$
$= \tan 42°$
$= 0.9004$

2. $\sin \theta = \frac{\sqrt{3}}{2}$
$\theta = 60°$

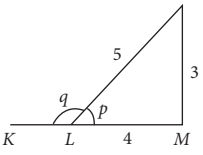
3. $\sin \theta = -0.8660$ (Quadrant/*Sukuan* III or/*atau* IV)
Corresponding reference angle
Sudut rujukan sepadan
$= \sin^{-1} 0.8660$
$= 60°$
$\theta = (180° + 60°) = 240°$ or/*atau*
$\theta = (360° - 60°) = 300°$

4.



5. 218° lies in quadrant III
218° terletak dalam sukuan III
$\cos \theta = -\cos (0° - 180°)$
$\cos 218° = -\cos (218° - 180°)$
$= -\cos 38°$
$= -0.7880$

6. $\sin p = \frac{3}{5}$
$\tan q = -\frac{3}{4}$



7. $\sin^{-1} (0.5736) = 35°$
$\cos 35° = 0.8192$

8. Height of wall from the floor to the ladder
Tinggi dinding dari lantai ke tangga
$= \sqrt{8^2 - 6^2}$
$= \sqrt{28}$ m
$\sin \theta = \frac{\sqrt{28}}{8}$
$= 0.6614$

9. $OB = 6 \sin 60° = 5.1962$
$AB = 6 \sin 45° = 4.2426$
$x = OB - AB$
$= 5.1962 - 4.2426$
$= 0.9536$

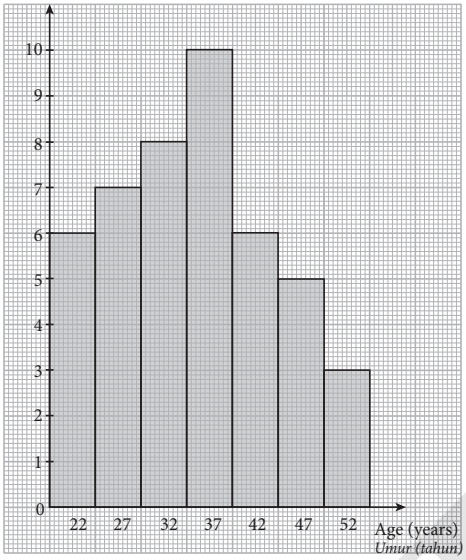
10. $\tan x = \frac{s}{5}$
$s = 5 \tan x$

1. (a)

Age (years) *Umur (tahun)*	Midpoint *Titik tengah*	Frequency *Kekerapan*
20 – 24	22	6
25 – 29	27	7
30 – 34	32	8
35 – 39	37	10
40 – 44	42	6
45 – 49	47	5
50 – 54	52	3

(b) (i) 35 – 39 (ii) 35.33

(c) Bilangan pelancong
Number of tourists

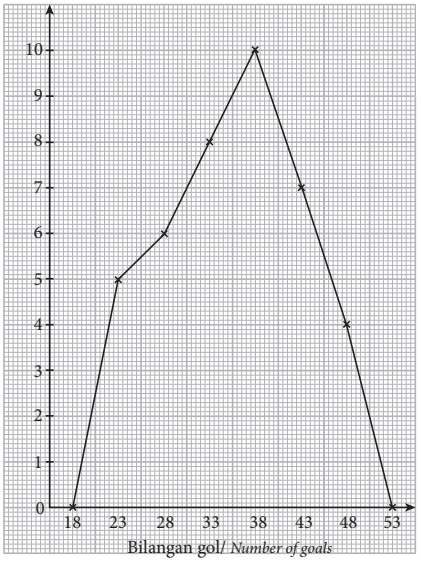


2. (a)

Number of goals scored *Bilangan jaringan gol*	Midpoint *Titik tengah*	Frequency *Kekerapan*
21 – 25	23	5
26 – 30	28	6
31 – 35	33	8
36 – 40	38	10
41 – 45	43	7
46 – 50	48	4

(b) 35.5

(c) Bilangan pasukan
Number of teams



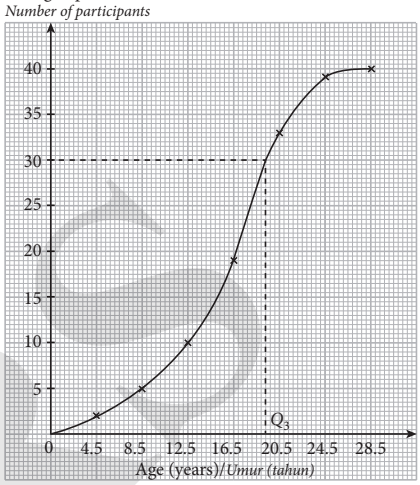
(d) 11

3. (a)

Age (years) *Umur (thaun)*	Frequency *Kekerapan*	Upper boundary *Sempadan atas*	Cumulative frequency *Kekerapan longgokan*
1 – 4	2	4.5	2
5 – 8	3	8.5	5
9 – 12	5	12.5	10
13 – 16	9	16.5	19
17 – 20	14	20.5	33
21 – 24	6	24.5	39
25 – 28	1	28.5	40

(b) 17 – 20

(c) Bilangan peserta
Number of participants



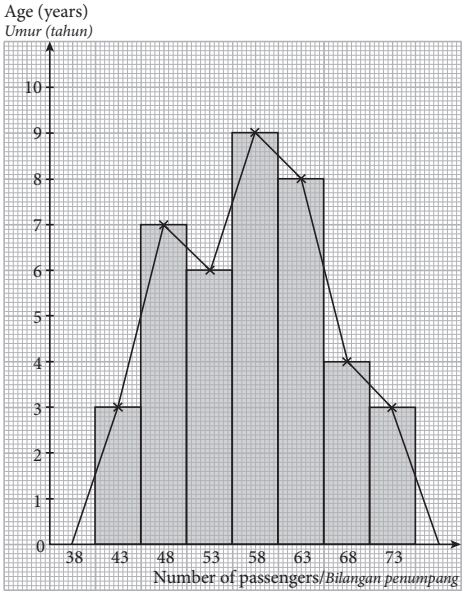
(d) (i) 19 (ii) 7

4. (a)

Age (years) *Umur (tahun)*	Midpoint *Titik tengah*	Frequency *Kekerapan*
41 – 45	43	3
46 – 50	48	7
51 – 55	53	6
56 – 60	58	9
61 – 65	63	8
66 – 70	68	4
71 – 75	73	3

(b) 57.5

(c) & (d)

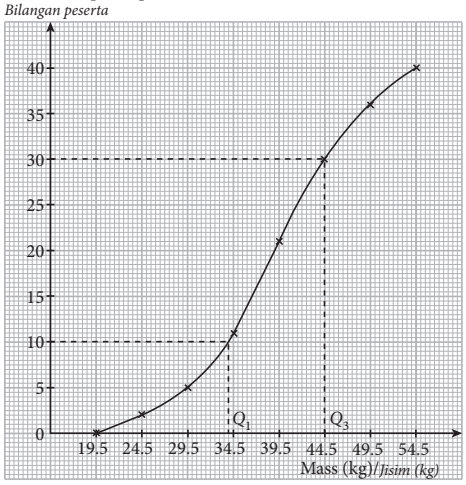


5. (a)

Mass (kg) *Jisim (kg)*	Frequency *Kekerapan*	Cumulative frequency *Kekerapan longgokan*	Upper boundary *Sempadan atas*
15 – 19	0	0	19.5
20 – 24	2	2	24.5
25 – 29	3	5	29.5
30 – 34	6	11	34.5
35 – 39	10	21	39.5
40 – 44	9	30	44.5
45 – 49	6	36	49.5
50 – 54	4	40	54.5

(b) 35 – 39

(c) Number of participants
Bilangan peserta



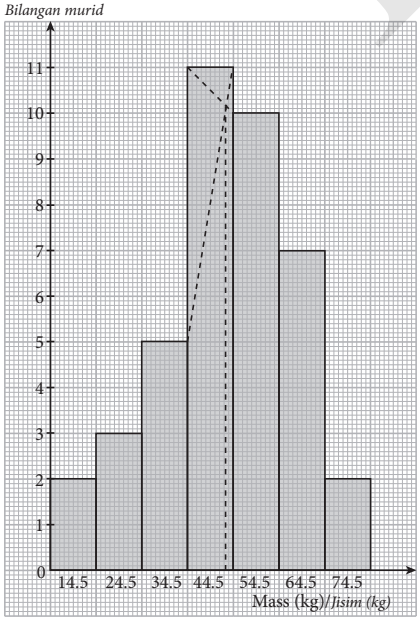
(d) (i) 34 (ii) 10.5

6. (a)

Mass (kg) *Jisim (kg)*	Midpoint *Titik tengah*	Frequency *Kekerapan*
10 – 19	14.5	2
20 – 29	24.5	3
30 – 39	34.5	5
40 – 49	44.5	11
50 – 59	54.5	10
60 – 69	64.5	7
70 – 79	74.5	2

(b) 47.75 kg

(c) Number of students
Bilangan murid



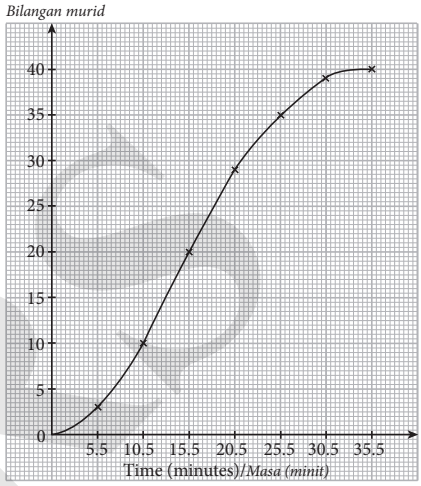
(d) 47.5

7. (a)

Time (minutes) *Masa (minit)*	Frequency *Kekerapan*	Cumulative frequency *Kekerapan longgokan*	Upper boundary *Sempadan atas*
1 – 5	3	3	5.5
6 – 10	7	10	10.5
11 – 15	10	20	15.5
16 – 20	9	29	20.5
21 – 25	6	35	25.5
26 – 30	4	39	30.5
31 – 35	1	40	35.5

(b) 16

(c) Number of students
Bilangan murid



(d) 27.5%

CHAPTER 8 Mathematical Modeling *Pemodelan Matematik*

1. (a) The total amount of the loan and the rate of the interest are known. The monthly payment of Encik Irfan's car loan instalment need to be determined.
Jumlah pinjaman dan kadar faedah telah diketahui. Bayaran bulanan untuk pinjaman pembiayaan kereta Encik Irfan perlu ditentukan.

(b) **Assumptions/*Andaian*:**
- We need to assume that the annual rate interest is unchanged.
  Kita perlu mengandaikan kadar faedah pinjaman tahunan tidak berubah.
- We need to assume that Encik Irfan repay his monthly installment on time so that he would not be charged of compound interest.
  Kita juga mengandaikan bahawa Encik Irfan membayar pinjaman bulanan tepat pada masa supaya tidak dikenakan faedah kompaun.

Variable/*Pemboleh ubah*:
- The variables involved are the total amount of loan, loan repayment period in years and interest rate of the loan.
  Pemboleh ubah yang terlibat ialah jumlah pinjaman, tempoh pembayaran balik pinjaman dalam tahun dan kadar faedah pinjaman.

2. (a) Puan Badariah's car uses 4 litres of petrol to travel for 12 km. The distance travelled of her car by using 50 litres petrol need to be found.
Kereta Puan Badariah menggunakan 4 liter petrol untuk bergerak sejauh 12 km. Jarak yang dilalui oleh keretanya dengan menggunakan 50 liter petrol perlu dicari.

(b) **Assumption/*Andaian*:**
- We need to assumes that the speed of the car is the same along the journey.
  Kita perlu mengandaikan kelajuan kereta adalah sama sepanjang perjalanan.

Variable/*Pemboleh ubah*:

- The variables involved are the distance travelled by the car and the volume of petrol.
  Pemboleh ubah yang terlibat ialah jarak yang dilalui oleh kereta dan isi padu petrol.

3. Identifying and defining the problems
Mengenal pasti dan mendefinisikan masalah

- Karen found that the population of bacteria tripled every 2 hours.
  Karen mendapati populasi bakteria menjadi 3 kali ganda setiap 2 jam.
- The number of bacteria in the beginning is 6 000.
  Bilangan bakteria pada permulaan ialah 6 000.

Making assumptions and identify variables
Membuat andaian dan mengenal pasti pemboleh ubah

- Assumes that the volume and the temperature of the substance are constant during the experiment.
  Andaikan isi padu dan suhu bahan tersebut adalah tetap sepanjang eksperimen dijalankan.
- Let N be the number of bacteria and t is the time, in hours, after the experiment began.
  Biarkan N mewakili bilangan bakteria dan t ialah masa dalam jam selepas eksperimen bermula.

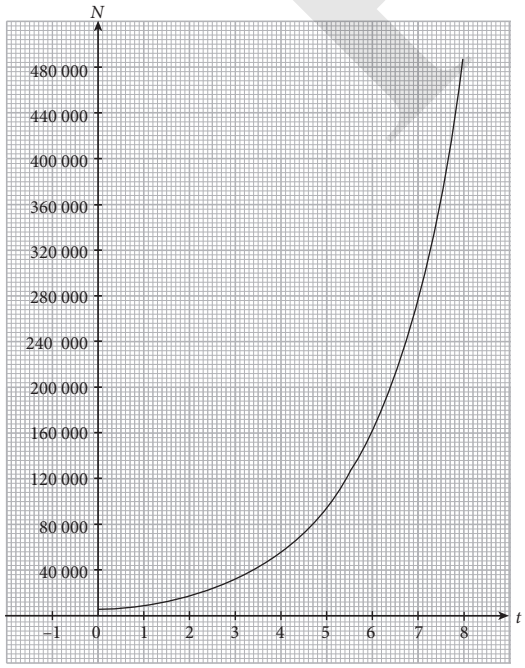
Applying mathematics to solve problems
Mengaplikasi matematik untuk menyelesaikan masalah

- Table is constructed to find the number of bacteria every two hours.
  Jadual dibina untuk mencari bilangan bakteria pada selang setiap dua jam.

t (hours/*jam*)	N(unit)
0	6 000
2	6 000 × 3 = 18 000
4	6 000 × 3 × 3 = 54 000
6	6 000 × 3 × 3 × 3 = 162 000
8	6 000 × 3 × 3 × 3 × 3 = 486 000

Verifying and interpreting the solution in the context of problems
Menentusahkan dan mentafsir penyelesaian dalam konteks masalah berkenaan

- A graph N against t is drawn based on the table.
  Satu graf N melawan t dilukis berdasarkan jadual.



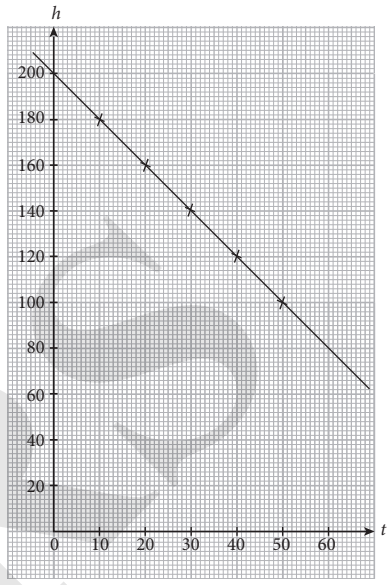
Refining the mathematical model
Memurnikan model matematik

- This model cannot be refined because the information given in the situation is limited. This model is not suitable for predicting the changes in bacteria populations for the situations that affecting other factors.
  Model ini tidak dapat dimurnikan lagi kerana maklumat yang diberikan dalam situasi di atas adalah terhad. Model ini tidak sesuai untuk meramalkan perubahan populasi bakteria bagi situasi yang dipengaruhi oleh pelbagai faktor lain.

Reporting the findings
Melaporkan dapatan

- The complete report is done based on the process of mathematical modeling
  Laporan penuh dibuat berdasarkan proses pemodelan matematik.

4. (a)



(b) From the graf/*Daripada graf*,

$$\text{Gradient/}Kecerunan = \frac{200 - 100}{0 - 50}$$
$$= -2$$

y-intercept/*Pintasan-y* = 200

The mathematical model is $h = -2t + 200$.
Model matematik yang dibentuk ialah h = –2t + 200

(c) We need to assume that the rate of water flow is constant when the tap is open.
Kita perlu mengandai kadar pengaliran keluar air adalah malar semasa pili dibuka.
[Accept other suitable assumption/*Terima andaian lain yang sesuai*]

5. (a) House model type *A*/*Rumah model jenis A*
$H = 125\,000^{0.24(0)}$
$H = 125\,000$

House model type *B*/*Rumah model jenis B*
$H = 280\,000e^{0.12(0)} + 1\,000$
$H = 281\,000$

The values of house model type *A* and house model type *B* is RM125 000 and RM281 000 respectively.
Nilai model rumah jenis A dan model rumah jenis B masing-masing ialah RM125 000 dan RM281 000.

(b) The value of house model type *B*/*Nilai model rumah jenis B*
$= 280\,000e^{0.12(5)} + 1\,000$
= RM511 193.26

(c) House model type *A*/*Model rumah jenis A*
$H = 125\,000e^{0.24(6)}$
$H = 527\,586.98$

House model type B/*Model rumah jenis B*
$H = 280\,000e^{0.12(6)} + 1\,000$
$H = 576\,241.30$

Difference in value/*Beza nilai*
= RM576 241.30 – RM527 586.98
= RM48 654.32

ASSESSMENT 1

Section A

1. (a) $150 \times \text{RM}184.75 = \text{RM}27\,712.50$ **2 M**

(b) $\text{RM}78\,620.62 + \text{RM}19\,551.52 - \text{RM}27\,715.50$ **1 M**

$= \text{RM}70\,456.64$

$Y = 7.05 \times 10^4$ **1 M**

2. (a) 14 **1 M**

(b) Mean/*Min*

$= \dfrac{2(11) + 3(12) + 4(13) + 2(14) + 3(15) + 5(16) + 3(17)}{2 + 3 + 4 + 2 + 3 + 5 + 3}$ **1 M**

$= \dfrac{314}{22}$

$= 14.27$ **1 M**

3. $7546_8 = (7 \times 8^3) + (5 \times 8^2) + (4 \times 8^1) + (6 \times 8^0)$

$= 3\,584 + 320 + 32 + 6$

$= 3942_{10}$ **1 M**

$41403_5 = (4 \times 5^4) + (1 \times 5^3) + (4 \times 5^2) + (0 \times 5^1) + (3 \times 5^0)$

$= 2\,500 + 125 + 100 + 0 + 3$

$= 2728_{10}$ **1 M**

$3942_{10} - 2728_{10} = 1214_{10}$

6	1214	
6	202	2
6	33	4
6	5	3
	0	5

1 M

$Q = 5342$ **1 M**

4. $(4x + 7)(2x - 3) = 189$

$8x^2 - 12x + 14x - 21 = 189$ **1 M**

$8x^2 + 2x - 210 = 0$

$4x^2 + x - 105 = 0$

$(x - 5)(4x + 21) = 0$ **1 M**

$x = 5, x = -\dfrac{21}{4}$ (Ignore/*Abaikan*) **1 M**

Price of 1 kg durian bought by Salwa

Harga 1 kg durian yang dibeli oleh Salwa

$= 4(5) + 7$

$= \text{RM}27$ **1 M**

5. (a) $\dfrac{5}{100} \times \text{RM}4\,350 = \text{RM}217.50$ **2 M**

(b) Interest charged

Faedah yang dikenakan

$= \dfrac{18}{100} \times \dfrac{15}{365} \times \text{RM}4\,350$

$= \text{RM}32.18$ **1 M**

Late payment charges

Caj bayaran lewat

$= \dfrac{1}{100} \times (\text{RM}4\,350 + \text{RM}32.18)$

$= \text{RM}43.82$ **1 M**

Outstanding balance

Jumlah baki tertunggak

$= \text{RM}4\,350 + \text{RM}32.18 + \text{RM}43.82$

$= \text{RM}4\,426$ **1 M**

6. (a) $\dfrac{83.16}{20} = 4.158\ \text{cm}^3$ **2 M**

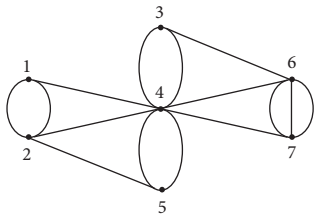
(b) $\dfrac{22}{7} \times j^2 \times 6 = 83.16$ **1 M**

$j^2 = 4.41$

$j = 2.1$ cm

$j = 21$ mm **1 M**

7.



3 M

8. (a) (i) Not a statement

1 M

Bukan pernyataan

(ii) Statement

1 M

Pernyataan

(b) *PQRST* has 5 sides

1 M

PQRST mempunyai 5 sisi

(c)

1st term *Sebutan ke-1*		3
2nd term *Sebutan ke-2*		6
3rd term *Sebutan ke-3*	3 + 6	9
4th term *Sebutan ke-4*	6 + 9	15
5th term *Sebutan ke-5*	9 + 15	24
6th term *Sebutan ke-6*	15 + 24	39
7th term *Sebutan ke-7*	24 + 39	63
8th term *Sebutan ke-8*	39 + 63	102
9th term *Sebutan ke-9*	63 + 102	165

1 M

True/*Benar* **1 M**

9. $x + y = 2\,040$

$x = 2\,040 - y$ ....①

$3x + 2y = 5\,070$ ....②

Substitute ① into ②

Gantikan ① ke dalam ②

$3(2\,040 - y) + 2y = 5\,070$ **1 M**

$6\,120 - 3y + 2y = 5\,070$

$y = 1\,050$ **1 M**

Substitute $y = 1\,050$ into ①

Gantikan $y = 1\,050$ ke dalam ①

$x = 2\,040 - 1\,050$

$= 990$ **1 M**

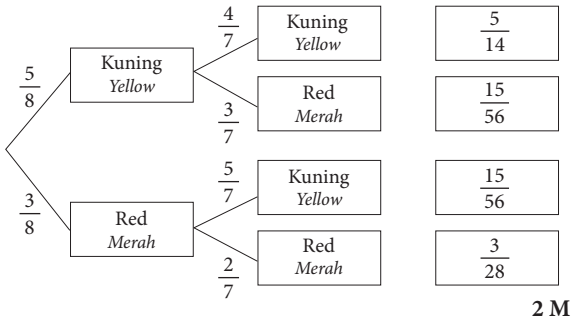
Halawei RM990	Appo RM1050	Total price Jumlah harga
1(990)	5(1 050)	6 240
2(990)	4(1 050)	6 180
3(990)	3(1 050)	6 120
4(990)	2(1 050)	6 060
5(990)	1(1 050)	6 000

Thus, Erlina buys 5 units of Halawei smartphone and 1 unit of Appo smartphone.

Maka, Erlina membeli 5 unit telefon pintar jenama Halawei dan 1 unit telefon pintar jenama Appo.

1 M

10. (a)



2 M

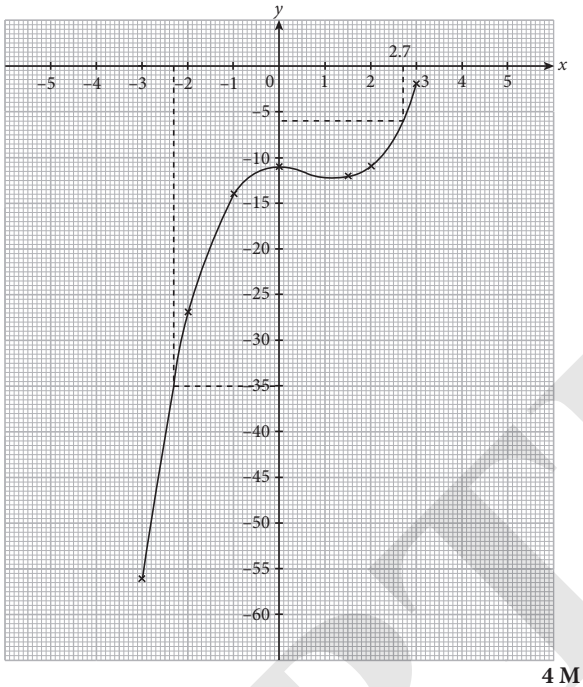
(b) $\frac{15}{56} + \frac{15}{56} = \frac{15}{28}$ **2 M**

11. (a)

x	−3	−2	−1	0	1.5	2	3
y	−56	−27	−14	−11	−12.1	−11	−2

2 M

(b)



4 M

(c) (i) −6 **1 M**

(ii) −2.3 **1 M**

12. (a) (i) $P = \frac{150}{1.75}$ **1 M**

$= 85.71 \text{ kmh}^{-1}/kmj^{-1}$ **1 M**

(ii) $Q = 83\frac{1}{3} \times 1.5$ **1 M**

$= 125 \text{ km}$ **1 M**

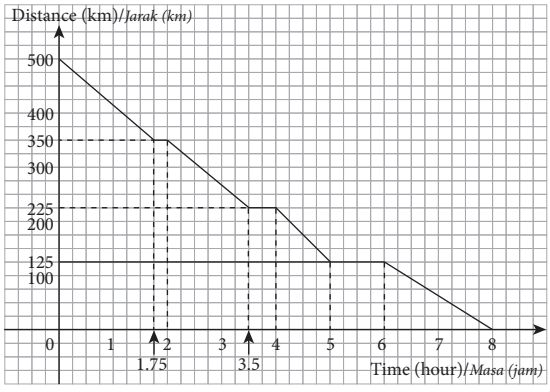
(iii) Duration/*Tempoh masa* $= \frac{125}{62.5}$ **1 M**

$= 2 \text{ hours}/jam$

Thus, $R = 1500$ hours **1 M**

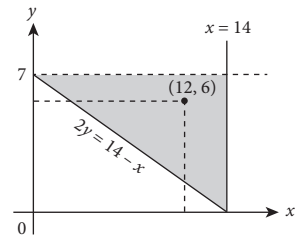
Maka, R = Jam 1500

(b)



4 M

13. (a) (i)(ii)(iii)



3 M

(iii) Yes, point (12, 6) is in the shaded region. **1 M**

Ya, titik (12, 6) berada di dalam rantau berlorek.

(b) (i) $3(70) = 4x + 60$ **1 M**

$210 = 4x + 60$

$4x = 150$

$x = 37.5$

Thus, the minimum production is 37 500 units

Maka, pengeluaran minimum ialah 37 500 unit **1 M**

(ii) I: $3y \leqslant 4x + 60$ **1 M**

II: $y \geqslant 70$ **1 M**

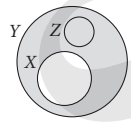
III: $x < 150$ **1 M**

14. (a) (i) (a) Region/*Rantau* 5 **1 M**

(b) Region/*Rantau* 1, 2, 3, 4 **2 M**

(ii) $(Q \cap R') \cup (P \cap R)$ **2 M**

(b)



4 M

15. (a) Mean/*Min*

$= \frac{1(3) + 2(5) + 3(6) + 4(8) + 5(4) + 6(3) + 7(1)}{3 + 5 + 6 + 8 + 4 + 3 + 1}$ **1 M**

$= \frac{108}{30}$

$= 3.6$ **1 M**

Variance/*Varians*, σ^2

$= \frac{3(1 - 3.6)^2 + 5(2 - 3.6)^2 + 6(3 - 3.6)^2 + 8(4 - 3.6)^2 + 4(5 - 3.6)^2 + 3(6 - 3.6)^2 + 1(7 - 3.6)^2}{30}$

$= \frac{73.2}{30}$

$= 2.44$ **1 M**

$\sigma = \sqrt{2.44}$

$= 1.56$ **1 M**

(b) Total age of team *X*/*Jumlah umur pasukan X*

$= 22 \times 18$

$= 396$

Total age of team *Y*/*Jumlah umur pasukan Y*

$= 26 \times 15$

$= 390$ **1 M**

Team *X*/*Pasukan X*:

$3.5 = \frac{\Sigma x^2}{18} - 22^2$

$63 = \Sigma x^2 - 8\,712$

$\Sigma x^2 = 8\,775$

Team *Y*/*Pasukan Y*:

$2.5 = \frac{\Sigma x^2}{15} - 26^2$

$37.5 = \Sigma x^2 - 10\,140$

$\Sigma x^2 = 10\,177.5$ **1 M**

Total Σx/*Jumlah* $\Sigma x = 396 + 390$

$= 786$

Total Σx^2/*Jumlah* $\Sigma x^2 = 8\,775 + 10\,177.5$

$= 18\,952.5$ **1 M**

Total mean/*Jumlah min* $= \frac{786}{30}$

$= 23.82$

Standard deviation/*Sisihan piawai*, σ

$= \sqrt{\frac{18\,952.5}{33} - 23.82^5}$

$= \sqrt{6.926}$

$= 2.632$ **1 M**

16. (a) (i) $\frac{\left(\frac{10}{100} \times 350\,000\right)}{5 \times 12}$ **2 M**

$= \frac{35\,000}{5 \times 12}$ **1 M**

$=$ RM583.33 **1 M**

(ii) Disposable income/*Pendapatan boleh guna*

$= 9\,000 - \frac{60}{100} \times 9\,000$

$=$ RM3 600 **1 M**

Bank loans/*Pinjaman bank*

$=$ RM350 000 – RM35 000

$=$ RM315 000 **1 M**

Total bank loans/*Jumlah pinjaman bank*

$=$ RM315 000 $+ \left(\frac{3.5}{100} \times \text{RM315 000} \times 25\right)$

$=$ RM590 625 **1 M**

Monthly instalment/*Ansuran bulanan*

$= \frac{\text{RM590 625}}{25 \times 12}$

$=$ RM1 968.75 **1 M**

Their planning is not good because the monthly instalment payment of RM1 968.75 is quite high, which is about 55% of their disposable income in a month. This is quite worrying if there is an increase in other expenses and emergencies.

Perancangan mereka kurang baik kerana bayaran ansuran bulanan sebanyak RM1 968.75 adalah agak tinggi, iaitu lebih kurang 55% daripada pendapatan boleh guna mereka dalam sebulan. Ini agak membimbangkan sekiranya terdapat pertambahan dalam perbelanjaan lain dan kecemasan. **1 M**

(b) (i) Annually savings/*Simpanan tahunan*

$= \frac{\text{RM300 000}}{10}$ **1 M**

$=$ RM30 000 **1 M**

Monthly savings/*Simpanan bulanan*

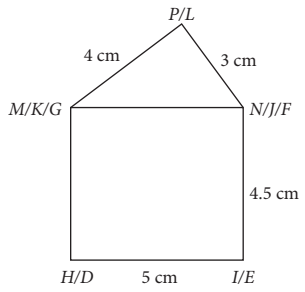
$= \frac{\text{RM30 000}}{12}$

$=$ RM2 500 **1 M**

(ii)
- Reduce the use of electricity and water utilities.
  Mengurangkan penggunakan utiliti elektrik dan air.
- Reduce savings to travel abroad or cancel travel plans every year.
  Mengurangkan simpanan untuk melancong ke luar negara atau membatalkan perancangan melancong ke luar negara setiap tahun.
- Change the plan of traveling abroad to a vacation in the country.
  Menukar perancangan melancong ke luar negara kepada percutian di dalam negara.
- Share cars to the office to reduce petrol and toll costs.
  Berkongsi kereta untuk ke pejabat untuk mengurangkan kos petrol dan tol.
- Reduce the allocation of children's school expenses.
  Mengurangkan peruntukan perbelanjaan sekolah anak-anak.
- Reduce the allocation of household expenses.
  Mengurangkan peruntukkan perbelanjaan rumah. **3 M**

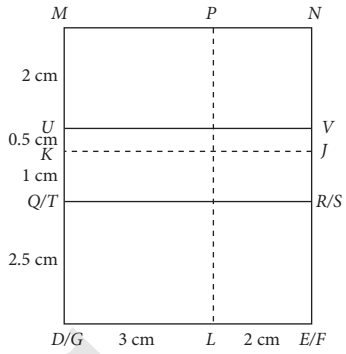
17. (a) (i) $\sqrt{4^2 + 3^2} = 5$ cm **2 M**

(ii)



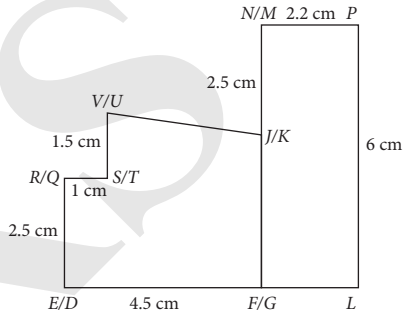
3 M

(c) (i)



5 M

(ii)

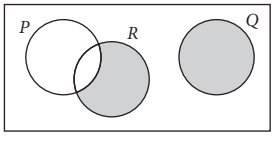


5 M

ASSESSMENT 2

Section A

1. (a) ξ



2 M

(b) (i) $y > -x + 12$ **1 M**

(ii) $y \leqslant x + 3$ **1 M**

(iii) $x \leqslant 12$ **1 M**

2. $2(5x + y) + 2(4x) = 120$

$10x + 2y + 8x = 120$

$18x + 2y = 120$

$9x + y = 60$ ....① **0.5 M**

$(3x + 2) + (7x + 3) + 2y + 3y = 130$

$10x + 5y + 5 = 130$

$10x + 5y = 125$

$2x + y = 25$ ....② **0.5 M**

From/*Daripada* ①,

$y = 60 - 9x$ ....③ **1 M**

Substitute ③ into ②

Gantikan ③ *ke dalam* ②

$2x + (60 - 9x) = 25$

$60 - 7x = 25$

$7x = 35$

$x = 5$ **1 M**

Substitute $x = 5$ into ①

Gantikan $x = 5$ *ke dalam* ①

$9(5) + y = 60$

$45 + y = 60$

$y = 15$ **1 M**

Thus/*Maka*, $x = 5$, $y = 15$

3. Total loans/*Jumlah pinjaman*

$= \text{RM85 000} - \frac{10}{100} \times \text{RM85 000}$ **1 M**

$= \text{RM76 500}$

Total monthly instalment/*Jumlah ansuran bulanan*

$= \frac{\left(\text{RM76 500} + \frac{3.5}{100} \times \text{RM76 500} \times 9\right)}{9 \times 12}$ **1 M**

$= \frac{\text{RM100 597.50}}{108}$

$= \text{RM931.46}$ **1 M**

4. (a) $m_{PQ} = \frac{6 - (-12)}{3 - (-3)}$

$= 3$ **1 M**

$= m_{RS}$

$y = mx + c$

$4 = 3(8) + c$

$c = -20$

Equation of straight line *RS*:
Persamaan garis lurus RS:

$y = 3x - 20$ **1 M**

(b) Substitute $y = 0$ into the equation in (a).
Gantikan y = 0 ke dalam persamaan di (a).

$0 = 3x - 20$

$x = \frac{20}{3}$ **1 M**

5. $6\,000(9x - 7)(3x + 1) = 120 \times 100 \times 100$ **1 M**

$27x^2 + 9x - 21x - 7 = 200$

$27x^2 - 12x - 207 = 0$

$9x^2 - 4x - 69 = 0$ **1 M**

$(9x + 23)(x - 3) = 0$ **1 M**

$x = -\frac{23}{9}$ (Ignore/*Abaikan*), $x = 3$ **1 M**

6. (a) (i) False/*Palsu* **1 M**

(ii) True/*Benar* **1 M**

(b) Implication 1: If $\frac{m}{n}$ is a proper fraction, then m and n are integers such that $0 < m < n$.

Implikasi 1: Jika $\frac{m}{n}$ ialah pecahan wajar, maka m dan n ialah integer dengan keadaan $0 < m < n$. **1 M**

Implication 2: If m and n are integers such that $0 < m < n$, then $\frac{m}{n}$ is a proper fraction.

Implikasi 2: Jika m dan n ialah integer dengan keadaan $0 < m < n$, maka $\frac{m}{n}$ ialah pecahan wajar. **1 M**

7.

	Bus/*Bas*	**Taxi/*Teksi***
Route ***Laluan***	$F \rightarrow G \rightarrow J \rightarrow L \rightarrow K$	$F \rightarrow G \rightarrow H \rightarrow K$
Time ***Masa***	15 + 5 + 20 + 5 + 25 + 5 + 48 = 123 minutes/*minit*	15 + 50 + 37 = 102 minutes/*minit*
Distance ***Jarak***	$60 = \frac{\text{Jarak}}{(123 \div 60)}$ = 123 km	$75 = \frac{\text{Jarak}}{(102 \div 60)}$ = 127.5 km
Fare ***Tambang***	123 × RM0.40 = RM49.20	127.5 × RM0.60 = RM76.50

2 M

If Zaiful chooses bus service: **1 M**

Jika Zaiful memilih perkhidamatan bas:

- Cheaper cost, which is RM49.20 compared to taxi, RM76.50
  Kos yang lebih murah, iaitu RM49.20 berbanding teksi, RM76.50.
- Shorter distance, which is 123 km compared to 127.5 km if taking a taxi.
  Jarak yang lebih pendek, iaitu 123 km berbanding 127.5 km jika menaiki teksi.

If Zaiful chooses taxi service: **1 M**

Jika Zaiful memilih perkhidmatan teksi:

- Faster time, which is 102 minutes compared to 123 minutes if taking a bus.
  Masa yang lebih pantas, iaitu 102 minit berbanding 123 minit jika menaiki bas.

8. (a) {(*M, M*), (*M, O*), (*M, N*), (*M, K*), (*M, E*), (*M, Y*), (*O, M*), (*O, O*), (*O, N*), (*O, K*), (*O, E*), (*O, Y*), (*N, M*), (*N, O*), (*N, N*), (*N, K*), (*N, E*), (*N, Y*), (*K, M*), (*K, O*), (*K, N*), (*K,K*), (*K, E*), (*K, Y*), (*E, M*), (*E, O*), (*E, N*), (*E, K*), (*E, E*), (*E, Y*), (*Y, M*), (*Y, O*), (*Y, N*), (*Y, K*), (*Y, E*), (*Y, Y*)} **2 M**

(b) {(*M, M*), (*M, N*), (*M, K*), (*M, Y*), (*O, O*), (*O, E*), (*N, M*), (*N, N*), (*N, K*), (*N, Y*), (*K, M*), (*K, N*), (*K, K*), (*K, Y*), (*E, O*), (*E, E*), (*Y, M*), (*Y, N*), (*Y, K*), (*Y, Y*)} **1 M**

Probability/*Kebarangkalian*

$= \frac{20}{36}$ **1 M**

$= \frac{5}{9}$

9. $\begin{pmatrix} 4 & 3 \\ 2 & 4 \end{pmatrix}\begin{pmatrix} p \\ q \end{pmatrix} = \begin{pmatrix} 360 \\ 330 \end{pmatrix}$ **1 M**

$\begin{pmatrix} p \\ q \end{pmatrix} = \frac{1}{(4)(4) - (3)(2)}\begin{pmatrix} 4 & -3 \\ -2 & 4 \end{pmatrix}\begin{pmatrix} 360 \\ 330 \end{pmatrix}$

$= \frac{1}{10}\begin{pmatrix} 1\,440 - 990 \\ -720 + 1\,320 \end{pmatrix}$ **1 M**

$= \frac{1}{10}\begin{pmatrix} 450 \\ 600 \end{pmatrix}$

$= \begin{pmatrix} 45 \\ 60 \end{pmatrix}$ **1 M**

Thus, the price of a calculator X is RM45 and a calculator Y is RM60.

Maka, harga bagi sebuah kalkulator X ialah RM45 dan sebuah kalkulator Y ialah RM60. **1 M**

10. (a) Rate of change of speed
Kadar perubahan laju

$= \frac{75 - 0}{1.5 - 0}$ **1 M**

$= 50 \text{ km h}^{-2} \text{ / } km\ j^{-2}$ **1 M**

(b) $\left(\frac{1}{2} \times 1.5 \times 75\right) + [75 \times (T - 1.5)] +$

$\left(\frac{1}{2} \times (75 + 125) \times (4 - T)\right) = 281.5$ **1 M**

$56.25 + 75T - 112.5 + 400 - 100T = 281.5$ **1 M**

$25T = 62.25$

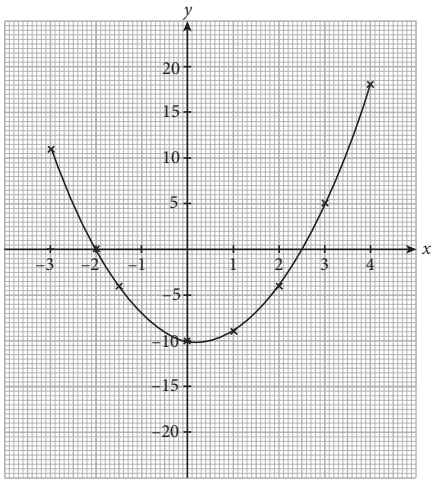
$T = 2.49$ **1 M**

11. (a)

x	−3	−2	−1.5	0	1	2	3	4
y	11	0	−4	−10	−9	−4	5	18

2 M

(b)



4 M

(c) (i) $x = -2.76, 3.27$ **2 M**

Answer is acceptable in range:
Jawapan diterima dalam julat:
$-2.85 \leqslant x \leqslant -2.65, 3.15 \leqslant x \leqslant 3.35$

(ii) $y = -8$ **1 M**

Answer is acceptable in range:
Jawapan diterima dalam julat:
$-8.5 \leqslant x \leqslant -7.5$

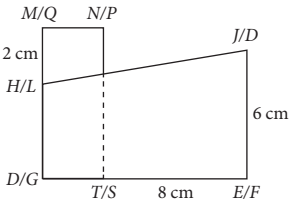
12. (a) (i) (2, 2) **1 M**

(ii) (3, −2) → (7, −3) **2 M**

(b) (i) **M** is a clockwise rotation of 90° about the centre *E* **3 M**
M *ialah putaran 90° arah jam pada pusat E*

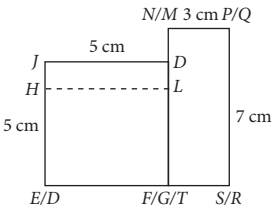
(ii) **N** is an enlargement about the centre *E* with a scale factor of 2 **3 M**
N *ialah pembesaran pada pusat E dengan faktor skala 2*

13. (a)



5 M

(b)



4 M

14. (a) Mean/*Min*, $\overline{x}$

$$= \frac{1\,300 + 1\,450 + 2\,500 + 1\,870 + 1\,950}{5}$$

$= 1\,814$ **1 M**

Varians, σ^2

$$= \frac{1\,300^2 + 1\,450^2 + 2\,500^2 + 1\,870^2 + 1\,950^2}{5} - 1\,814^2$$ **1 M**

$= 177\,784$ **1 M**

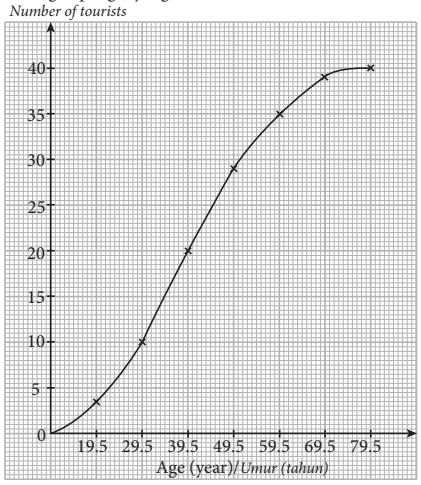
Standard deviation/*Sisihan piawai*, σ
$= \sqrt{177\,784}$
$= 421.64$ **1 M**

(b) (i)

Age (years) *Umur (tahun)*	**Number of visitors** *Bilangan pengunjung*	**Upper boundary** *Sempadan atas*
10 – 19	4	19.5
20 – 29	6	29.5
30 – 39	10	39.5
40 – 49	9	49.5
50 – 59	6	59.5
60 – 69	4	69.5
70 – 79	1	79.5

1 M

(b) (ii) Bilangan pengunjung
Number of tourists



4 M

(iii) 45.5 years old/*tahun* **1 M**

15. Comprehensive policy:
Polisi komprehensif:

The first RM1 000 *RM1 000 yang pertama*	RM305.50
RM26 × 49	RM1 274.00
Basic premium *Premium asas*	RM1 579.50
NCD 30%	RM473.85
Gross premium *Premium kasar*	RM1 105.65

3 M

Third party policy, fire and theft:
Polisi pihak ketiga, kebakaran dan kecurian:

Basic premium *Premium asas*	RM1 184.63
NCD 30%	RM355.39
Gross premium *Premium kasar*	RM829.24

3 M

Third party policy:
Polisi pihak ketiga:

Basic premium *Premium asas*	RM135.00
NCD 30%	RM40.50
Gross premium *Premium kasar*	RM94.50

3 M

16. (a) (i) Specific/*Khusus*: **1 M**
Saves money to build a house
Menyimpan wang untuk membina rumah

(ii) Measurable/*Boleh diukur*: **1 M**
Saves an amount of RM2 604.20 a month
Menyimpan sejumlah RM2 604.20 sebulan

(iii) Time-bound/*Tempoh masa*: **1 M**
8 years/*tahun*

(b) $175\,000 = \frac{280\,000k}{8}$

$k = 5$ **1 M**

$$\text{Cost} = \frac{5 \times \text{Number of bricks}}{\text{Mass of cement}}$$

$$\textit{Kos} = \frac{5 \times \textit{Bilangan batu bata}}{\textit{Jisim simen}}$$ **1 M**

$175\,000 = \dfrac{5 \times [\text{Number of bricks/}\textit{Bilangan batu bata}]}{20}$ **1 M**

Number of bricks/*Bilangan batu bata*

$= 700\,000$ **1 M**

(c) $(x - 10)(25x) = 50\,000$

$25x^2 - 250x = 50\,000$

$x^2 - 10x - 2\,000 = 0$ **1 M**

$(x - 50)(x + 40) = 0$ **1 M**

$x = 50$, $x = -40$ (Ignore/*Abaikan*) **1 M**

Number of tins of paint/*Bilangan tin cat*

$= 50 - 10$

$= 40$ **1 M**

(d) Remaining money to be saved

Baki wang yang perlu disimpan

$= \text{RM}250\,000 - \text{RM}1.204 \times 10^5$ **1 M**

$= \text{RM}129\,600$ **1 M**

Monthly savings

Simpanan bulanan

$= \dfrac{\text{RM}129\,600}{8 \times 12}$ **1 M**

$= \text{RM}1\,350$ **1 M**