

SULIT
1449/1
Matematik
Kertas 1
Ogos
2025
 $1\frac{1}{2}$ jam

1449/1



MAKTAB RENDAH SAINS MARA

PEPERIKSAAN AKHIR SIJIL PENDIDIKAN MRSM 2025

MATEMATIK

Kertas 1

Satu jam tiga puluh minit

JANGAN BUKA KERTAS PEPERIKSAAN INI SEHINGGA DIBERITAHU

1. *Kertas peperiksaan ini mengandungi 40 soalan.*
2. *Jawab semua soalan.*
3. *Bagi setiap soalan, pilih satu jawapan sahaja. Hitamkan jawapan anda pada kertas jawapan objektif yang disediakan.*
4. *Kertas peperiksaan ini adalah dalam dwibahasa.*
5. *Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan.*
6. **Kertas jawapan objektif hendaklah diserahkan kepada pengawas peperiksaan pada akhir peperiksaan.**

Kertas peperiksaan ini mengandungi 35 halaman bercetak.

NOMBOR DAN OPERASI NUMBER AND OPERATIONS

- 1 $a^m \times a^n = a^{m+n}$
- 2 $a^m \div a^n = a^{m-n}$
- 3 $(a^m)^n = a^{mn}$
- 4 $a^{\frac{1}{n}} = \sqrt[n]{a}$
- 5 $a^{\frac{m}{n}} = (a^{\frac{1}{n}})^m = (a^{\frac{1}{n}})^m$
- 6 $a^{\frac{m}{n}} = \sqrt[n]{a^m} = (\sqrt[n]{a})^m$
- 7 Faedah mudah / *Simple Interest*, $I=Prt$
- 8 Nilai matang / *Maturity value*, $MV = P\left(1 + \frac{r}{n}\right)^{nt}$
- 9 Jumlah bayaran balik / *Total repayment*, $A = P + Prt$
- Premium = $\frac{\text{Nilai muka polisi}}{\text{RMx}} \times (\text{Kadar premium per RMx})$
- 10 Premium = $\frac{\text{Face value of policy}}{\text{RMx}} \times (\text{Premium rate per RMx})$
- Jumlah insurans yang harus dibeli = $\left(\frac{\text{Peratusan}}{\text{ko-insurans}}\right) \times \left(\frac{\text{Nilai boleh}}{\text{insurans harta}}\right)$
- 11 Amount of required insurance = $\left(\frac{\text{Percentage of}}{\text{co-insurance}}\right) \times \left(\frac{\text{Insurable value}}{\text{of property}}\right)$

PERKAITAN DAN ALGEBRA RELATIONSHIP AND ALGEBRA

- 1 Jarak / *Distance* = $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
- 4 $m = \frac{y_2 - y_1}{x_2 - x_1}$
- Titik Tengah / *Midpoint*
- 2 $(x, y) = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$
- 5 $m = -\frac{\text{pintasan } y}{\text{pintasan } x}$
- Laju Purata = $\frac{\text{Jumlah jarak}}{\text{Jumlah masa}}$
- 5 $m = -\frac{y\text{-intercept}}{x\text{-intercept}}$
- 3 Average speed = $\frac{\text{Total distance}}{\text{Total time}}$
- 6 $A^{-1} = \frac{1}{ad - bc} \begin{pmatrix} d & -b \\ -c & a \end{pmatrix}$

SUKATAN DAN GEOMETRI
MEASUREMENT AND GEOMETRY

- 1 Teorem Pythagoras / *Pythagoras Theorem*, $c^2 = a^2 + b^2$
- 2 Hasil tambah sudut pedalaman poligon / *Sum of interior angles of a polygon*
 $= (n - 2) \times 180^\circ$
- 3 Lilitan bulatan $= \pi d = 2\pi r$
Circumference of circle $= \pi d = 2\pi r$
- 4 Luas bulatan $= \pi r^2$
Area of circle $= \pi r^2$
- 5
$$\frac{\text{Panjang lengkok}}{2\pi r} = \frac{\theta}{360^\circ}$$

$$\frac{\text{Arc length}}{2\pi r} = \frac{\theta}{360^\circ}$$
- 6
$$\frac{\text{Luas sektor}}{\pi r^2} = \frac{\theta}{360^\circ}$$

$$\frac{\text{Area of sector}}{\pi r^2} = \frac{\theta}{360^\circ}$$
- 7 Luas layang $= \frac{1}{2} \times \text{hasil darab panjang dua pepenjuru}$
Area of kite $= \frac{1}{2} \times \text{product of two diagonals}$
- 8 Luas trapezium $= \frac{1}{2} \times \text{hasil tambah dua sisi selari} \times \text{tinggi}$
Area of trapezium $= \frac{1}{2} \times \text{sum of parallel sides} \times \text{height}$
- 9 Luas permukaan silinder $= 2\pi r^2 + 2\pi rh$
Surface area of cylinder $= 2\pi r^2 + 2\pi rh$
- 10 Luas permukaan kon $= \pi r^2 + \pi rs$
Surface area of cone $= \pi r^2 + \pi rs$
- 11 Luas permukaan sfera $= 4\pi r^2$
Surface area of sphere $= 4\pi r^2$
- 12 Isi padu prisma $= \text{luas keratan rentas} \times \text{tinggi}$
Volume of prism $= \text{cross sectional area} \times \text{height}$
- 13 Isi padu silinder $= \pi r^2 h$
Volume of cylinder $= \pi r^2 h$

- 14 Isi padu kon = $\frac{1}{3}\pi r^2 h$
Volume of cone = $\frac{1}{3}\pi r^2 h$
- 15 Isi padu sfera = $\frac{4}{3}\pi r^3$
Volume of sphere = $\frac{4}{3}\pi r^3$
- 16 Isi padu piramid = $\frac{1}{3} \times \text{luas tapak} \times \text{tinggi}$
Volume of pyramid = $\frac{1}{3} \times \text{base area} \times \text{height}$
- 17 Faktor skala, $k = \frac{PA'}{PA}$
Scale factor, k = $\frac{PA'}{PA}$
- 18 Luas imej = $k^2 \times \text{luas objek}$
Area of image = $k^2 \times \text{area of object}$

STATISTIK DAN KEBARANGKALIAN
STATISTICS AND PROBABILITY

- 1 Min / Mean, $\bar{x} = \frac{\sum x}{N}$
- 2 Min / Mean, $\bar{x} = \frac{\sum fx}{\sum f}$
- 3 Varians / Variance, $\sigma^2 = \frac{\sum (x - \bar{x})^2}{N} = \frac{\sum x^2}{N} - \bar{x}^2$
- 4 Varians / Variance, $\sigma^2 = \frac{\sum f(x - \bar{x})^2}{\sum f} = \frac{\sum fx^2}{\sum f} - \bar{x}^2$
- 5 Sisihan piawai / Standard deviation, $\sigma = \sqrt{\frac{\sum (x - \bar{x})^2}{N}} = \sqrt{\frac{\sum x^2}{N} - \bar{x}^2}$
- 6 Sisihan piawai / Standard deviation, $\sigma = \sqrt{\frac{\sum f(x - \bar{x})^2}{\sum f}} = \sqrt{\frac{\sum fx^2}{\sum f} - \bar{x}^2}$
- 7 $P(A) = \frac{n(A)}{n(S)}$
- 8 $P(A') = 1 - P(A)$

Jawab semua soalan.

- 1 Hitung hasil tambah faktor perdana bagi 60.

Calculate the sum of the prime factors of 60.

- A 10
- B 11
- C 12
- D 13

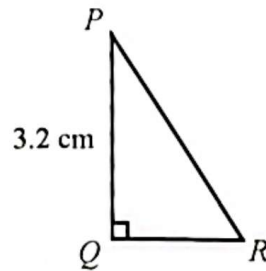
- 2 Antara berikut, manakah pola bagi jujukan nombor $-1, 2, 5, 8, \dots$?

Which of the following is the pattern of a number sequence $-1, 2, 5, 8, \dots$?

- A $3n + 4, n = 0, 1, 2, 3, \dots$
- B $3n + 4, n = 1, 2, 3, 4, \dots$
- C $3n - 4, n = 0, 1, 2, 3, \dots$
- D $3n - 4, n = 1, 2, 3, 4, \dots$

- 3 Rajah 1 menunjukkan sebuah segi tiga bersudut tegak PQR .

Diagram 1 shows a right-angled triangle PQR .



Rajah 1

Diagram 1

Diberi bahawa luas segi tiga ialah 4.288 cm^2 .

Hitung panjang tapak, dalam cm, segi tiga tersebut dan bundarkan jawapan anda betul kepada dua angka bererti.

Given the area of the triangle is 4.288 cm^2 .

Calculate the length of base, in cm, of the triangle and round off your answer correct to two significant figures.

- A 1.3
B 1.34
C 2.68
D 2.7
- 4 Ungkapkan $5^4 + 5^3 + 5^1 + 1$ sebagai nombor dalam asas lima.
Express $5^4 + 5^3 + 5^1 + 1$ as a number in base five.

- A 11010_5
B 11011_5
C 4310_5
D 43010_5

- 5 Khairul ingin menghadiahkan sebuah beg tangan berjenama bernilai RM1 500 kepada ibunya. Beliau merancang untuk membeli beg tangan tersebut dalam masa enam bulan dengan meletakkan sasaran untuk menyimpan sebanyak 10% daripada gaji bulanannya berjumlah RM2 500. Pilih komponen SMART yang bersesuaian dengan matlamat kewangan Khairul.

Khairul wants to give a designer handbag that costs RM1 500 to his mother. He plans to purchase the handbag in six months by setting a target to save 10% of his monthly salary of RM2 500. Choose the SMART component that matches Khairul's financial goals.

- A Boleh didapati
Available
- B Boleh diperolehi
Acquirable
- C Boleh diterima
Acceptable
- D Boleh dicapai
Attainable

- 6 Jadual 1 menunjukkan maklumat insurans kebakaran yang dibeli oleh Harith.
Table 1 shows the fire insurance information purchased by Harith.

Nilai boleh insurans <i>Insurable value</i>	RM313 400
Jumlah insurans yang harus dibeli <i>Amount of required insurance</i>	75% daripada nilai boleh insurans <i>75% of the insurable value</i>
Jumlah insurans yang dibeli oleh Harith <i>Amount of insurance purchased by Harith</i>	RM200 000
Deduktibel <i>Deductible</i>	RM5 000

Jadual 1

Table 1

Rumah Harith mengalami kebakaran dan menanggung kerugian menyeluruh.
Hitung, dalam RM, kerugian yang ditanggung oleh Harith.
Harith's house caught on fire and suffered a total loss.
Calculate, in RM, the loss borne by Harith.

- A 40 050
- B 83 350
- C 118 400
- D 195 000

- 7 Jadual 2 menunjukkan harga makanan dan minuman yang dipesan oleh Kamelia dan rakannya.

Table 2 shows the prices of food and beverages ordered by Kamelia and her friend.

Makanan dan Minuman <i>Food and Beverages</i>	Kuantiti <i>Quantity</i>	Harga (RM) <i>Price (RM)</i>
Nasi lemak	1	7.50 / pinggan 7.50 / plate
Mi goreng <i>Fried noodles</i>	1	6.50 / pinggan 6.50 / plate
Kopi <i>Coffee</i>	2	3.20 / cawan 3.20 / cup

Jadual 2

Table 2

Diberi bahawa cukai perkhidmatan yang dikenakan adalah sebanyak 6%.

Hitung, dalam RM, bil mereka.

Given that the service tax charged is 6%.

Calculate, in RM, their bill.

- A 18.23
- B 19.18
- C 20.40
- D 21.62

- 8 Diberi $p : q : r = 7 : 9 : 11$ dan $r - p = 36$.

Hitung nilai q .

Given $p : q : r = 7 : 9 : 11$ and $r - p = 36$.

Calculate the value of q .

- A 18
- B 63
- C 81
- D 99

- 9 Dalam satu pertandingan kuiz, peserta akan menerima r markah bagi setiap jawapan betul dan ditolak s markah bagi setiap jawapan salah. Dalam pengiraan markah akhir, peserta akan menerima x markah bonus jika berjaya menjawab setiap 7 soalan betul dan akan ditolak y markah jika menjawab setiap 3 soalan salah. Jika Noura telah menjawab 15 soalan betul dan 10 soalan salah, tentukan ungkapan algebra yang mewakili jumlah markah Noura.

In a quiz competition, participants are awarded r marks for each correct answer and penalised s marks for each incorrect answer. In the final marks calculation, participants will receive a bonus of x marks for every 7 correct answers, and a deduction of y marks for every 3 incorrect answers. If Noura answered 15 questions correctly and 10 questions incorrectly, determine the algebraic expression that represent her total marks.

- A $15r - 10s + 3x - 7y$
- B $15r - 10s + 2x - 3y$
- C $15r - 10s + 7x - 3y$
- D $15r - 10s + 3x - 2y$

- 10 Permudahkan
Simplify

$$\frac{7x}{6} - \frac{5y}{9x}$$

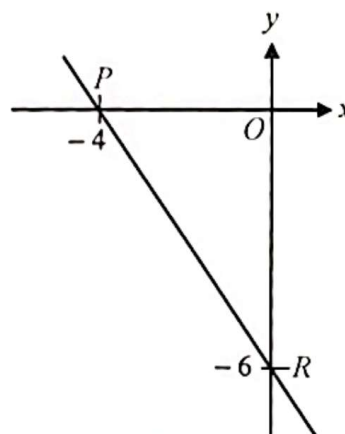
A $\frac{63x^2 - 30y}{18x}$

B $\frac{63x^2 - 10y}{18x}$

C $\frac{21x^2 - 30y}{18x}$

D $\frac{21x^2 - 10y}{18x}$

- 11 Rajah 2 menunjukkan satu garis lurus PR pada suatu satah Cartes.
Diagram 2 shows a straight line PR on a Cartesian plane.



Rajah 2

Diagram 2

Hitung titik tengah bagi PR .

Calculate the midpoint of PR .

A $(-2, -6)$

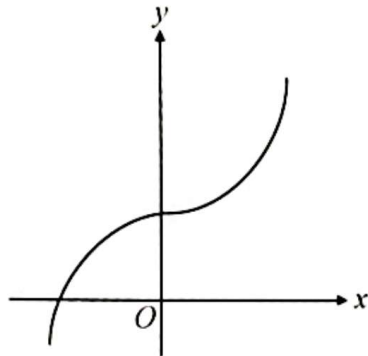
B $(-2, -3)$

C $(-3, -2)$

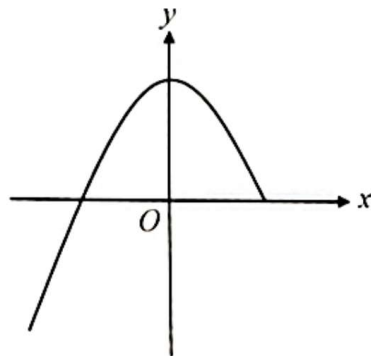
D $(-4, -3)$

- 12 Antara graf berikut, manakah **bukan** satu fungsi?
*Which of the following graph is **not** a function?*

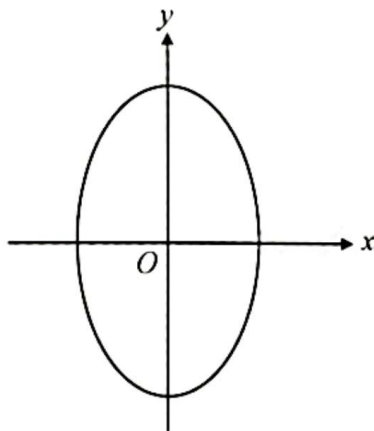
A



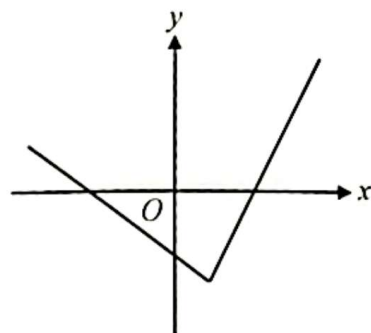
B



C



D



[Lihat halaman sebelah

- 13 Antara pasangan koordinat berikut, manakah mempunyai nilai kecerunan positif?
Which of the following pair of coordinates has positive gradient?

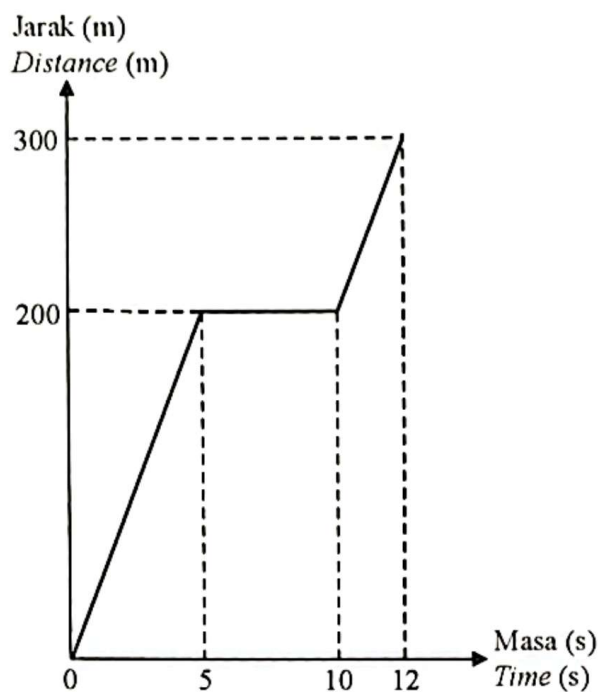
- A (4, 5) dan/and (3, 6)
- B (7, 11) dan/and (11, 8)
- C (-2, -1) dan/and (-5, -9)
- D (-4, -6) dan/and (-7, -3)

- 14 Diberi salah satu punca persamaan kuadratik $5x^2 + hx - 3 = 0$ ialah -3 .
Tentukan persamaan paksi simetri bagi graf fungsi kuadratik itu.
*Given one of the roots of the quadratic equation $5x^2 + hx - 3 = 0$ is -3 .
Determine the equation of axis of symmetry of the graph for the quadratic function.*

- A $x = -\frac{7}{5}$
- B $x = -\frac{1}{5}$
- C $x = \frac{1}{5}$
- D $x = \frac{7}{5}$

- 15 Rajah 3 menunjukkan graf jarak-masa bagi pergerakan sebuah motosikal berkuasa tinggi dalam tempoh 12 saat.

Diagram 3 shows the distance-time graph of the movement of a superbike for a period of 12 seconds.



Rajah 3

Diagram 3

Hitungkan laju, dalam m s^{-1} , bagi tempoh 2 saat yang pertama.

Calculate the speed, in m s^{-1} , for the first 2 seconds.

- A 40
- B 50
- C 100
- D 150

- 16 Rajah 4 menunjukkan graf laju-masa bagi suatu zarah.

Diagram 4 shows a speed-time graph for a particle.

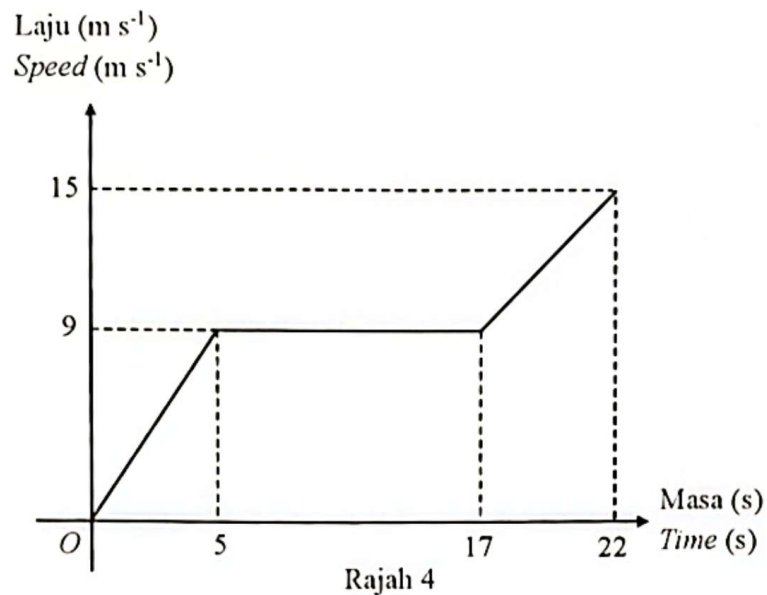


Diagram 4

Tentukan tempoh masa, dalam saat, zarah itu bergerak dengan laju seragam.

Determine the duration, in seconds, the particle moves with uniform speed.

- A 5
- B 9
- C 12
- D 17

- 17 Diberi p berubah secara songsang dengan kuasa dua q dan $p = 3$ apabila $q = 2$, ungkapkan p dalam sebutan q .

Given p varies inversely as the square of q and $p = 3$ when $q = 2$, express p in terms of q .

A $p = \frac{6}{q^2}$

B $p = \frac{12}{q^2}$

C $p = \frac{3}{2}q^2$

D $p = \frac{3}{4}q^2$

- 18 Masa yang diambil, t jam, untuk memotong rumput di sebuah padang berubah secara langsung dengan luas, $L \text{ m}^2$, dan secara songsang dengan bilangan pekerja, p . Seramai 3 orang pekerja mengambil masa 4.5 jam untuk memotong rumput di sebuah padang dengan luas $1 \times 10^4 \text{ m}^2$.

Hitung bilangan pekerja yang diperlukan untuk memotong rumput di sebuah padang dengan luas $4 \times 10^4 \text{ m}^2$, dalam tempoh 9 jam.

The time taken, t hours, to cut the grass in a field varies directly as the area of the field, $L \text{ m}^2$, and varies inversely as the number of workers, p . A total of 3 workers took 4.5 hours to cut the grass in a field of an area of $1 \times 10^4 \text{ m}^2$.

Calculate the number of workers needed to cut the grass in a field of an area of $4 \times 10^4 \text{ m}^2$, in 9 hours.

A 6

B 9

C 12

D 24

- 19 Antara berikut, matriks yang manakah boleh didarab?

Which of the following matrices can be multiplied?

A $\begin{bmatrix} 1 \\ 2 \end{bmatrix} \begin{bmatrix} 4 \\ 5 \end{bmatrix}$

B $\begin{bmatrix} 5 & -2 & 4 \\ 3 & 6 & 7 \end{bmatrix} \begin{bmatrix} 2 & 8 \\ 1 & -9 \end{bmatrix}$

C $\begin{bmatrix} 5 \\ 8 \\ -1 \end{bmatrix} \begin{bmatrix} 5 & 4 \end{bmatrix}$

D $\begin{bmatrix} 8 & 5 & 0 \end{bmatrix} \begin{bmatrix} 7 & -8 & 0 \end{bmatrix}$

- 20 Diberi $\begin{pmatrix} m & -3 \\ -1 & 7 \end{pmatrix} \begin{pmatrix} m \\ 5 \end{pmatrix} = 2 \begin{pmatrix} m \\ n \end{pmatrix}$ dan $m > 0$.

Hitung nilai $\frac{2m-n}{5m}$.

It is given that $\begin{pmatrix} m & -3 \\ -1 & 7 \end{pmatrix} \begin{pmatrix} m \\ 5 \end{pmatrix} = 2 \begin{pmatrix} m \\ n \end{pmatrix}$ and $m > 0$.

Calculate the value of $\frac{2m-n}{5m}$.

A $-\frac{1}{5}$

B $-\frac{4}{15}$

C $-\frac{4}{5}$

D $-\frac{13}{15}$

- 21 Jadual 3 menunjukkan beberapa komponen penting dalam pemodelan matematik.

Table 3 shows some important components in mathematical modeling.

<i>J</i>	Membuat andaian dan mengenal pasti pemboleh ubah <i>Making assumptions and identifying the variables</i>
<i>K</i>	Mengenal pasti dan mendefinisikan masalah <i>Identifying and defining the problems</i>
<i>L</i>	Memurnikan model matematik <i>Refining the mathematical model</i>
<i>M</i>	Mengaplikasi matematik untuk menyelesaikan masalah <i>Applying mathematics to solve problems</i>

Jadual 3

Table 3

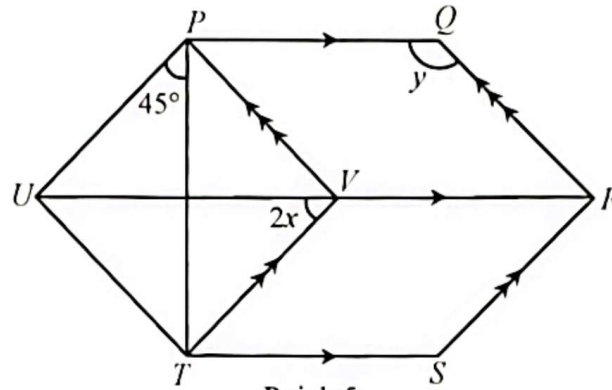
Susun komponen tersebut mengikut turutan yang betul.

Arrange the components in the correct order.

- A $K \rightarrow J \rightarrow M \rightarrow L$
B $K \rightarrow J \rightarrow L \rightarrow M$
C $K \rightarrow M \rightarrow J \rightarrow L$
D $K \rightarrow M \rightarrow L \rightarrow J$

- 22 Rajah 5 menunjukkan segi empat selari $PQRV$ dan $RSTV$. $PVTU$ ialah sebuah segi empat sama dan UVR ialah garis lurus.

Diagram 5 shows parallelograms $PQRV$ and $RSTV$. $PVTU$ is a square and UVR is a straight line.



Rajah 5

Diagram 5

Hitung nilai bagi $x + y$.

Calculate the value of $x + y$.

- A 112.5°
 B 135.0°
 C 157.5°
 D 180.0°
- 23 Rumah Syed terletak 13 km ke utara dari rumah Jaafar. Rumah Tony terletak 35 km ke barat dari rumah Jaafar.

Hitung jarak terpendek, dalam km, yang harus dilalui oleh Syed untuk ke rumah Tony.

Syed's house is located 13 km north of Jaafar's house. Tony's house is located 35 km west of Jaafar's house.

Calculate the shortest distance, in km, that Syed must travel to reach Tony's house.

- A 22.0
 B 32.5
 C 37.3
 D 48.0

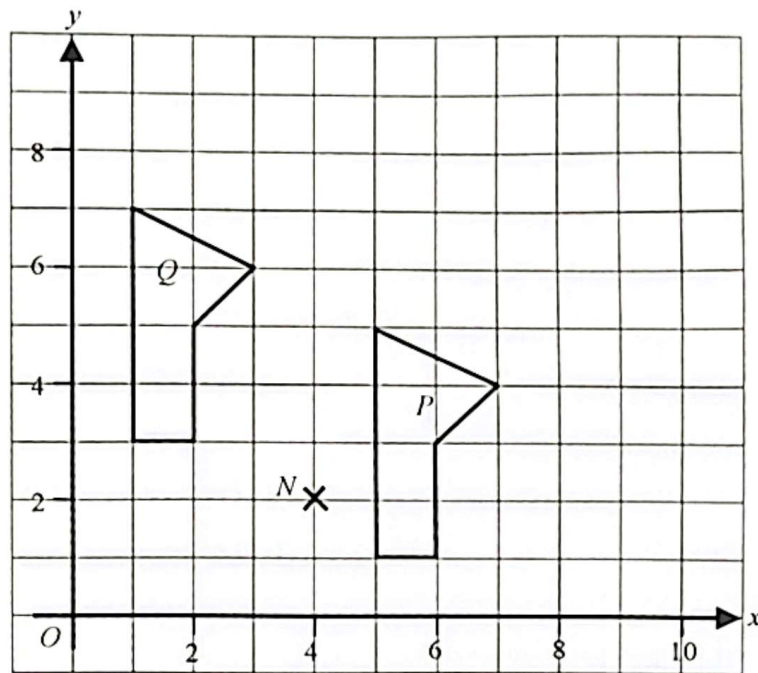
- 24 Sebuah cermin hiasan berbentuk poligon sekata mempunyai sudut peluaran $\frac{1}{4}$ daripada sudut pedalamannya. Berdasarkan reka bentuk ini, berapakah bilangan sisi cermin tersebut?

A decorative mirror in the shape of a regular polygon has an exterior angle $\frac{1}{4}$ of its interior angle. Based on this design, how many sides does the mirror have?

- A 4
- B 8
- C 10
- D 20

- 25 Rajah 6 menunjukkan Q ialah imej bagi P di bawah satu transformasi M .

Diagram 6 shows that Q is the image of P under a transformation M .



Rajah 6

Diagram 6

Diberi titik N ialah imej di bawah satu transformasi yang sama.

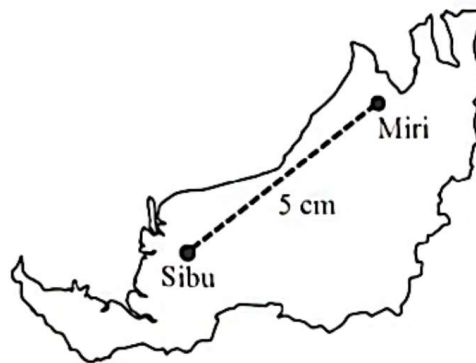
Nyatakan koordinat objek bagi titik N .

It is given that point N is the image under the same transformation.

State the coordinates of the object of point N .

- A (0, 0)
- B (0, 4)
- C (8, 0)
- D (8, 4)

- 26 Rajah 7 menunjukkan jarak antara Sibü dan Miri pada sebuah peta.
Diagram 7 shows the distance between Sibü and Miri on a map.



Rajah 7
Diagram 7

Diberi tempoh penerbangan dari Sibü ke Miri ialah 30 minit dengan kelajuan purata 450 km/j.

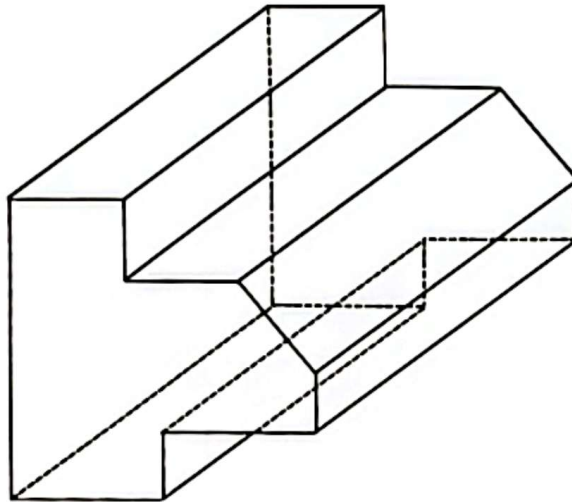
Tentukan skala yang digunakan untuk lukisan berskala di atas.

Given that the flight duration from Sibü to Miri is 30 minutes with an average speed of 450 km/h.

Determine the scale used for the scale drawing above.

- A 1 : 45 000
- B 1 : 4 500 000
- C $1 : \frac{1}{45\,000}$
- D $1 : \frac{1}{4\,500\,000}$

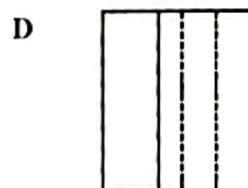
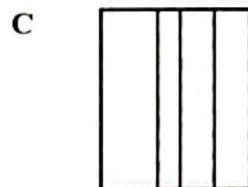
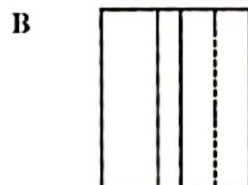
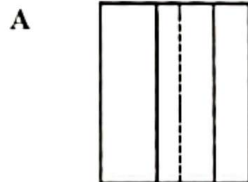
- 27 Rajah 8 menunjukkan sebuah pepejal di atas suatu satah mengufuk.
Diagram 8 shows a solid lies on a horizontal plane.



Rajah 8

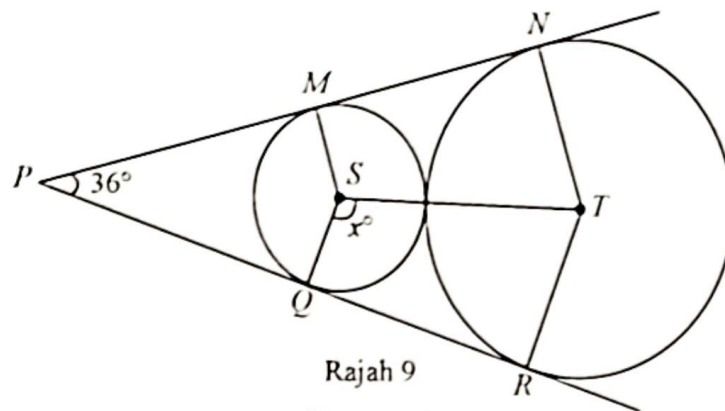
Diagram 8

Antara berikut, manakah menunjukkan pelan bagi pepejal di atas?
Which of the following shows the plan of the solid?



- 28 Rajah 9 menunjukkan dua bulatan masing-masing berpusat S dan T . PMN dan PQR ialah tangen sepunya bagi kedua-dua bulatan.

Diagram 9 shows two circles with centre S and T respectively. PMN and PQR are common tangents to both circles.



Rajah 9
Diagram 9

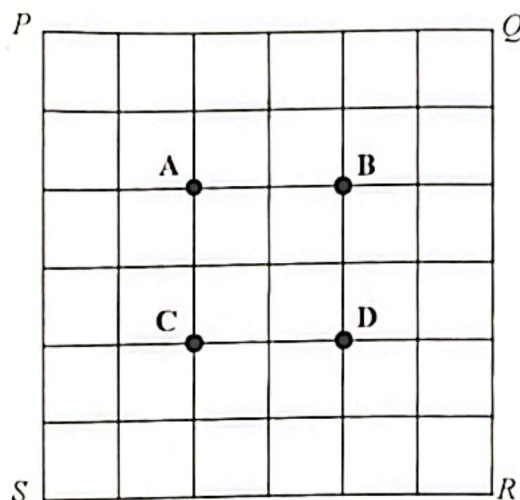
Hitung nilai x .

Calculate the value of x .

- A 108
- B 120
- C 126
- D 144

- 29 Rajah 10 menunjukkan sebuah segi empat sama $PQRS$ yang dilukis pada grid segi empat sama bersisi 1 unit. Titik T dan titik U ialah dua titik yang bergerak di dalam segi empat sama $PQRS$.

Diagram 10 shows a square $PQRS$ drawn on a square grid with sides of 1 unit. Points T and U are two points that move inside the square $PQRS$.



Rajah 10

Diagram 10

Diberi,

Given,

T ialah titik yang bergerak dengan keadaan jaraknya sentiasa sama dari garis lurus PQ dan QR .

U ialah titik yang bergerak dengan keadaan jaraknya sentiasa 2 unit dari garis lurus PS .

Antara titik A, B, C atau D, manakah titik persilangan antara lokus T dan lokus U .

T is a moving point such that it is always equidistant from the straight lines PQ and QR .

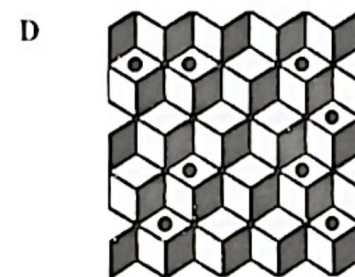
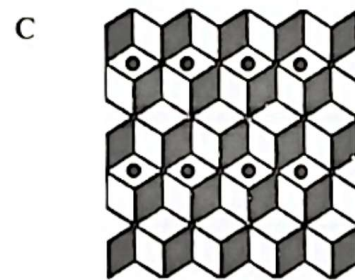
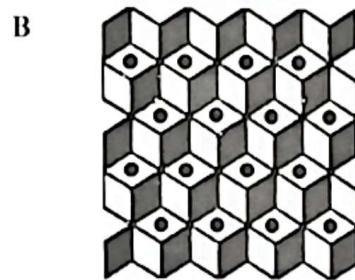
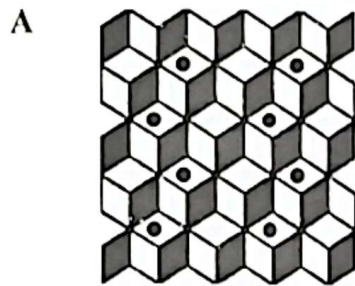
U is a moving point such that it is always 2 units from the straight line PS .

Which of the points A, B, C or D, is the intersection point between locus of T and locus of U .

- 30 Luas objek P dan objek Q masing-masing ialah 10 cm^2 dan 90 cm^2 . P ialah imej bagi Q di bawah satu pembesaran. Faktor skala pembesaran itu ialah
- The areas of object P and object Q are 10 cm^2 and 90 cm^2 respectively. P is the image of Q under an enlargement. The scale factor of the enlargement is*

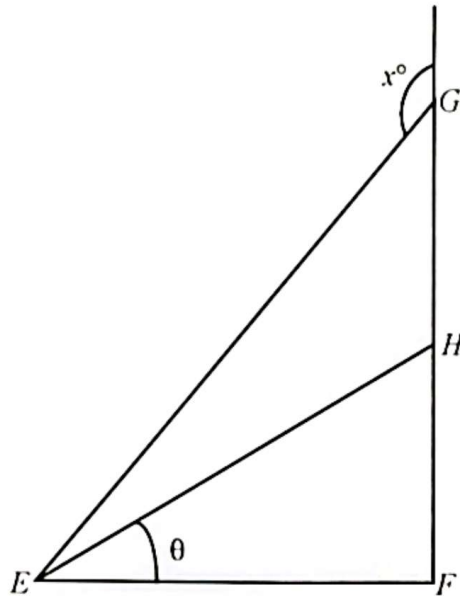
- A -3
- B $-\frac{1}{3}$
- C $\frac{1}{9}$
- D 9

- 31 Antara berikut, manakah **tidak** mewakili suatu teselasi?
*Which of the following does **not** represents a tessellation?*



- 32 Rajah 11 menunjukkan sebuah segi tiga bersudut tegak EFG . FHG ialah satu garis lurus.

Diagram 11 shows a right-angled triangle EFG . FHG is a straight line.



Rajah 11

Diagram 11

Diberi bahawa H ialah titik tengah FG dan $\sin \theta = \frac{5}{13}$.

Hitung nilai $\tan x$.

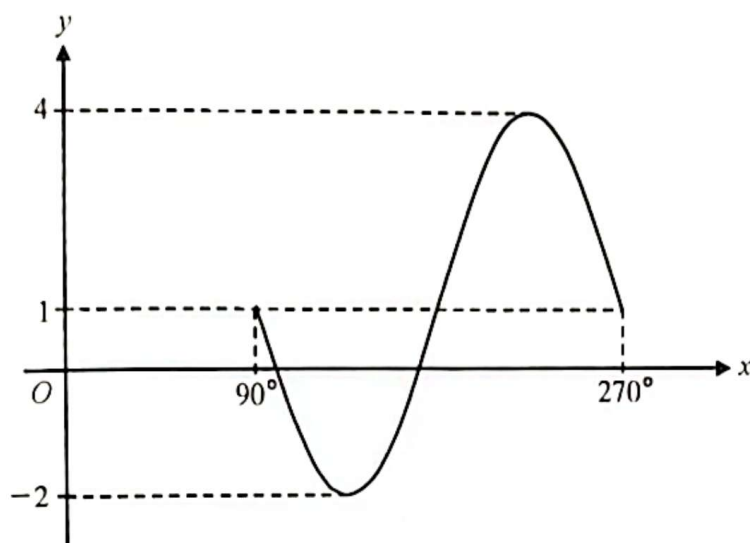
Given that H is the midpoint of FG and $\sin \theta = \frac{5}{13}$.

Calculate the value of $\tan x$.

- A $\frac{6}{5}$
- B $\frac{5}{12}$
- C $-\frac{5}{12}$
- D $-\frac{6}{5}$

- 33 Rajah 12 menunjukkan graf $y = a \sin bx + 1$ bagi $90^\circ \leq x \leq 270^\circ$.

Diagram 12 shows the graph of $y = a \sin bx + 1$ for $90^\circ \leq x \leq 270^\circ$.



Rajah 12

Diagram 12

Tentukan nilai a dan nilai b .

Determine the value of a and of b .

- A $a = 4, b = 2$
- B $a = 3, b = 2$
- C $a = 4, b = 1$
- D $a = 4, b = 1$

- 34 Rajah 13 menunjukkan sepapan telur.
Diagram 13 shows a tray of eggs.



Rajah 13
Diagram 13

Dalam sepapan telur itu, terdapat 4 biji telur rosak.
Hitung kebarangkalian memilih sebiji telur yang masih elok.
*In the tray, there are 4 rotten eggs.
Calculate the probability of choosing an egg that is still fresh.*

- A $\frac{13}{15}$
B $\frac{21}{25}$
C $\frac{4}{25}$
D $\frac{2}{15}$

- 35 Jadual 4 menunjukkan taburan skor yang diperoleh sekumpulan pelajar dalam satu pertandingan.

Table 4 shows the distributions of scores obtained by a group of students in a competition.

Skor <i>Score</i>	Kekerapan longgokan <i>Cumulative frequency</i>
3	3
4	8
5	$x + 10$
6	$2x + 10$

Jadual 4

Table 4

Diberi min skor ialah 5, tentukan julat antara kuartil bagi skor tersebut.

Given the mean of the score is 5, determine the interquartile range of the score.

- A 1.0
- B 1.5
- C 2.0
- D 2.5

- 36 Sebuah bekas mengandungi x botol air tebu dan y botol air kelapa. Jika sebotol air dipilih secara rawak dari bekas itu, hitung kebarangkalian bahawa sebotol air tebu atau air kelapa dipilih.

A container holds x bottles of sugarcane juice and y bottles of coconut water. If a bottle is chosen at random from the container, calculate the probability that a bottle of sugarcane juice or coconut water is chosen.

A $\frac{1}{2}$

B 1

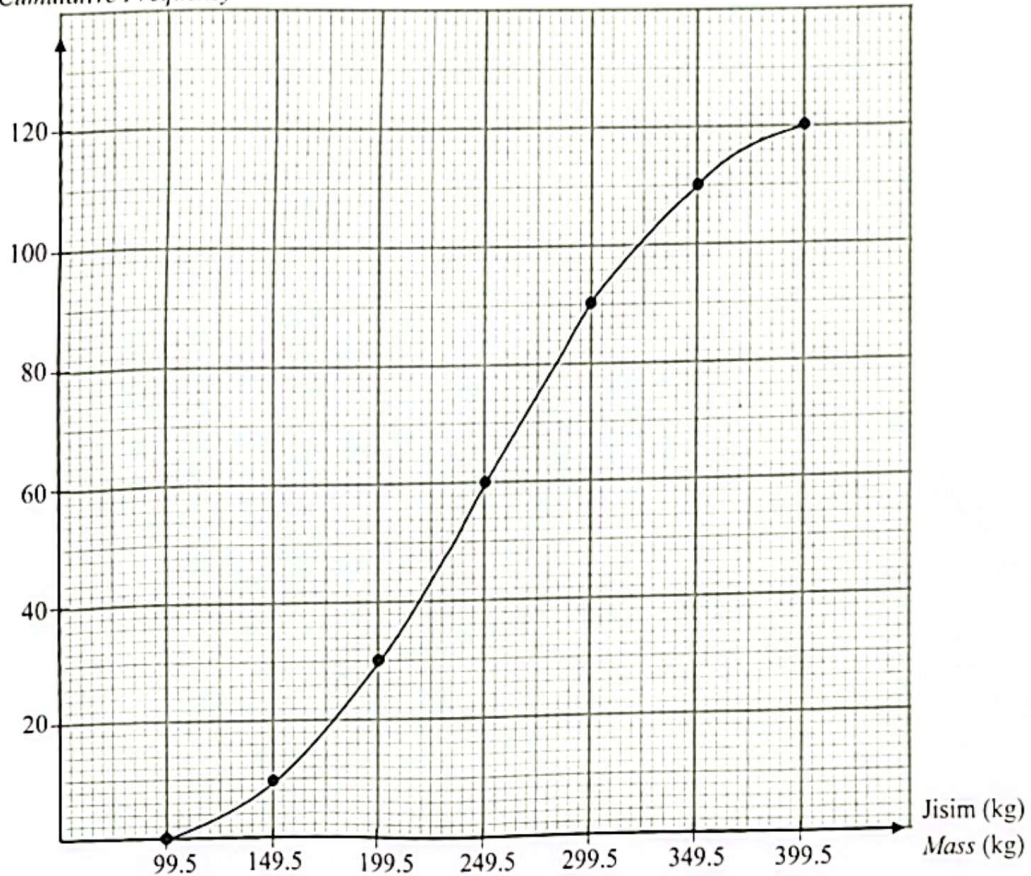
C $\frac{1}{x + y}$

D $\frac{2}{x + y}$

- 37 Rajah 14 ialah satu ogif yang menunjukkan taburan jisim bagi sejumlah buah mangga yang dipetik di sebuah kebun.

Diagram 14 is an ogive showing the distribution of the mass for a number of mangoes plucked at a farm.

Kekerapan longgokan
Cumulative Frequency



Rajah 14

Diagram 14

Hitung perbezaan antara persentil ke-90, P_{90} dan persentil ke-50, P_{50} bagi jisim mangga, dalam kg, di kebun itu.

Calculate the differences between 90th percentile, P_{90} and 50th percentile, P_{50} of mass, in kg, of the mangoes at the farm.

- A 65
- B 95
- C 219.5
- D 229.5

- 38 Dalam sebuah sekolah, 60% daripada pelajar menyertai kelab sukan, 40% menyertai kelab muzik, dan 25% menyertai kedua-dua kelab. Jika seorang pelajar dipilih secara rawak, hitung kebarangkalian bahawa pelajar tersebut **tidak** menyertai mana-mana kelab.

*In a school, 60% of the students join the sports club, 40% join the music club, and 25% join both clubs. If a student is chosen at random, calculate the probability that the student does **not** join any club.*

- A 0
- B $\frac{1}{4}$
- C $\frac{1}{2}$
- D $\frac{3}{4}$

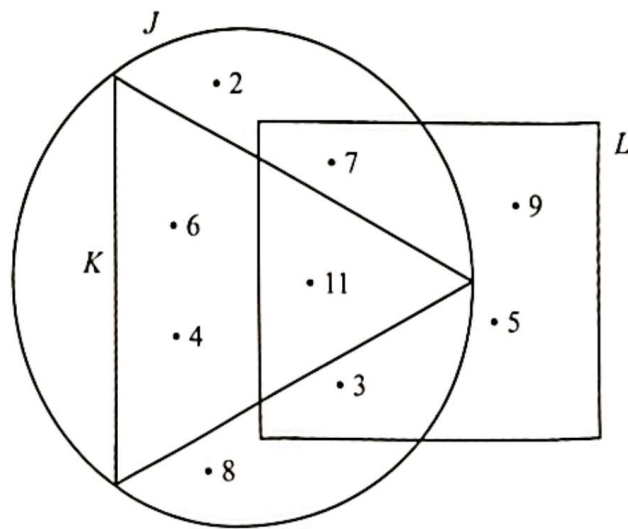
- 39 Antara berikut, manakah merupakan pernyataan yang benar?

Which of the following is a true statement?

- A Satu daripada risiko yang dilindungi oleh insurans hayat ialah bencana alam.
One of the risks covered by life insurance is natural disasters.
- B Semua segi empat tepat ialah segi empat sama.
All rectangles are squares.
- C Terdapat lima nombor perdana yang kurang daripada 10.
There are five prime numbers less than 10.
- D Jumlah sudut pedalaman sebuah heptagon ialah 900° .
The sum of interior angles of a heptagon is 900° .

- 40 Rajah 15 menunjukkan sebuah gambar rajah Venn yang mewakili set J , K dan L .

Diagram 15 shows a Venn diagram that represents set J , K and L .



Rajah 15

Diagram 15

Antara pilihan jawapan berikut, manakah mewakili set $\{3, 4, 6, 7, 11\}$?

Which of the following represents the set $\{3, 4, 6, 7, 11\}$?

- A $J \cap (K \cap L)$
- B $(J \cup K) \cap L$
- C $(J \cap K) \cup L$
- D $J \cap (K \cup L)$

KERTAS PEPERIKSAAN TAMAT

END OF QUESTION PAPER