

NAMA: TINGKATAN:

**SMK DATO' PANGLIMA PERANG KIRI
35400 TAPAH ROAD, PERAK**

**PEPERIKSAAN PERCUBAAN SPM
TINGKATAN 5
TAHUN 2022**

**MATEMATIK
KERTAS 1
(1449/1)**

Satu jam tiga puluh minit

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

- 1 *Kertas soalan ini adalah dalam dwibahasa.*
- 2 *Soalan dalam bahasa Melayu mendahului soalan yang sepadan dalam bahasa Inggeris.*
- 3 *Sila hitamkan jawapan anda pada kertas jawapan yang diberikan. Sekiranya anda ingin menukar jawapan, padam dan hitamkan jawapan anda yang baharu.*

RUMUS MATEMATIK MATHEMATICAL FORMULAE

Rumus-rumus berikut boleh membantu anda untuk menjawab soalan. Simbol-simbol yang diberi adalah yang biasa digunakan.

The following formulae may be helpful in answering the questions. The symbols given are the ones commonly used

NOMBOR DAN OPERASI NUMBERS AND OPERATIONS

- | | |
|--|--|
| <p>1 $a^m \times a^n = a^{m+n}$</p> <p>3 $(a^m)^n = a^{mn}$</p> <p>5 Faedah mudah / <i>Simple interest</i>, $I = Prt$</p> <p>6 Nilai matang/<i>Maturity value</i>, $MV = P \left(1 + \frac{r}{n}\right)^{nt}$</p> <p>7 Jumlah bayaran balik / <i>Total repayment</i>, $A = P + Prt$</p> | <p>2 $a^m \div a^n = a^{m-n}$</p> <p>4 $a^{\frac{m}{n}} = (a^m)^{\frac{1}{n}}$</p> |
|--|--|

PERKAITAN RELATIONS

- 1 Jarak / *Distance* = $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
- 2 Titik Tengah / *midpoint* $(x, y) = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$
- 3 Purata laju = $\frac{\text{jarak yang dilalui}}{\text{masa yang diambil}}$
Average speed = $\frac{\text{distance travelled}}{\text{time taken}}$
- 4 $m = \frac{y_2 - y_1}{x_2 - x_1}$
- 5 $m = -\frac{\text{pintasan-y}}{\text{pintasan-x}}$
 $m = -\frac{\text{y-intercept}}{\text{x-intercept}}$
- 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 = $\pi d = 2\pi j$
Circumference of circle = $\pi d = 2\pi r$
- 4 Luas bulatan = πj^2
Area of circle = πr^2
- 5 $\frac{\text{Panjang lengkok}}{2\pi j} = \frac{\theta}{360^\circ}$
 $\frac{\text{Arc length}}{2\pi r} = \frac{\theta}{360^\circ}$
- 6 $\frac{\text{Luas sektor}}{\pi j^2} = \frac{\theta}{360^\circ}$
 $\frac{\text{Area of sector}}{\pi r^2} = \frac{\theta}{360^\circ}$
- 7 Luas layang = $\frac{1}{2} \times$ hasil darab panjang dua pepenjuru
Area of kite = $\frac{1}{2} \times \text{product of two diagonals}$
- 8 Luas trapezium = $\frac{1}{2} \times$ hasil tambah dua sisi selari $\times$ tinggi
Area of trapezium = $\frac{1}{2} \times \text{sum of parallel sides} \times \text{height}$
- 9 Luas permukaan silinder = $2\pi j^2 + 2\pi jt$
Surface area of cylinder = $2\pi r^2 + 2\pi rh$
- 10 Luas permukaan kon = $\pi j^2 + \pi js$
Surface area of cone = $\pi r^2 + \pi rs$
- 11 Luas permukaan sfera = $4\pi j^2$
Surface area of sphere = $4\pi r^2$
- 12 Isipadu prisma tegak = luas keratan rentas $\times$ tinggi
Volume of right prism = *cross sectional area* $\times$ *height*
- 13 Isipadu silinder = $\pi j^2 t$
Volume of cylinder = $\pi r^2 h$

- 14 Isipadu kon = $\frac{1}{3}\pi j^2 t$
Volume of cone = $\frac{1}{3}\pi r^2 h$
- 15 Isipadu sfera = $\frac{4}{3}\pi j^3$
Volume of sphere = $\frac{4}{3}\pi r^3$
- 16 Isipadu piramid tegak = $\frac{1}{3} \times \text{luas tapak} \times \text{tinggi}$
Volume of right 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, $\bar{x} = \frac{\sum fx}{f}$
- 3 Varians / Variance, $\sigma^2 = \frac{\sum (x - \bar{x})^2}{N} = \frac{\sum x^2}{N} - \bar{x}^2$
- 4 Varians / Variance, $\sigma^2 = \frac{\sum f(x - \bar{x})^2}{f} = \frac{\sum fx^2}{f} - \bar{x}^2$
- 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, $\sigma = \sqrt{\frac{\sum f(x - \bar{x})^2}{f}} = \sqrt{\frac{\sum fx^2}{f} - \bar{x}^2}$
- 7 $P(A) = \frac{n(A)}{n(S)}$
- 8 $P(A') = 1 - P(A)$

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

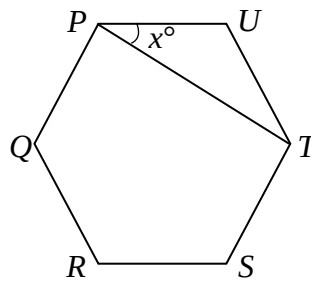
1. Susunan nombor mengikut tertib menurun yang manakah adalah benar?

Which arrangement of numbers in descending order is true?

- A 8, 4, 0, 2, -2
- B -12, -10, -8, 6
- C 6, 4, 2, -2, 0
- D 2, 0, -2, -4, -6

2. Dalam Rajah 2, $PQRSTU$ ialah heksagon sekata. PT ialah garis lurus.

In Diagram 2, $PQRSTU$ is a regular hexagon. PT is a straight line.



Rajah / Diagram 2

Cari nilai x .

Find the value of x .

- A 20°
- B 30°
- C 40°
- D 50°

3. Diberi bahawa x ialah satu integer. Ketaksamaan linear yang manakah antara berikut mempunyai nilai $x = 5, 6, 7, \dots$?

It is given that x is an integer. Which of the following inequalities has $x = 5, 6, 7 \dots$?

I $x + 1 > 6$

II $x - 1 \geq 5$

III $3x \geq 15$

IV $2x - 1 > 7$

A I dan III

B I dan IV

C II dan IV

D III dan IV

4. Diberi $r = 6$, $q = 2$ dan $s = -3$. Cari nilai bagi $3r + 5q - s$.

Given $r = 6$, $q = 2$ and $s = -3$. Find the value of $3r + 5q - s$.

A -25

B 13

C 25

D 31

5. Diberi bahawa $3p + 2 = 5(p - 2)$, hitung nilai p .

Given that $3p + 2 = 5(p - 2)$, calculate the value of p .

A 6

B 2

C -6

D -2

6. Diberi bahawa sebutan ke- n bagi suatu jujukan nombor ialah $T_n = n(2n - 1)$, dengan keadaan $n = 1, 2, 3, \dots$. Cari sebutan ke-7.

It is given that the n^{th} term of a number sequence is $T_n = n(2n - 1)$, such that $n = 1, 2, 3, \dots$. Find the 7th term.

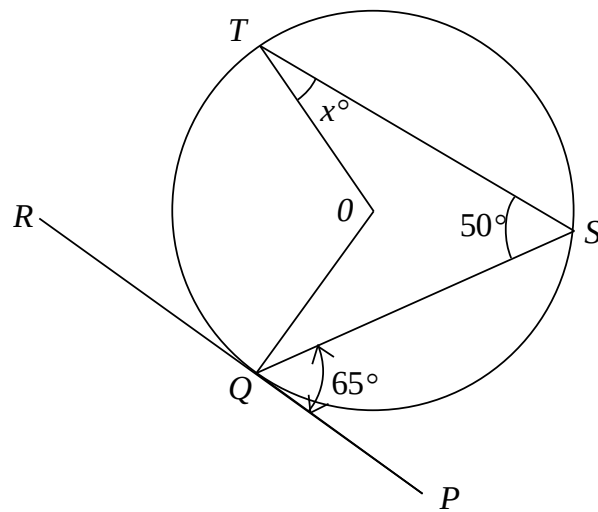
- A 45
- B 66
- C 91
- D 120

7. Ungkapkan $\frac{5}{x+5} - \frac{5x}{x^2 + 6x + 5}$ sebagai satu pecahan tunggal dalam bentuk termudah.

Express $\frac{5}{x+5} - \frac{5x}{x^2 + 6x + 5}$ as a single fraction in its simplest form.

- A $\frac{5}{(x+1)(x+5)}$
- B $\frac{10}{(x+1)(x+5)}$
- C $\frac{5}{(x+5)}$
- D $\frac{10}{(x+5)}$

8. Dalam Rajah 8, PQR ialah tangen kepada bulatan TQS berpusat di O .
In Diagram 8, PQR is the tangent to the circle TQS with centre O .



Rajah / Diagram 8

Cari nilai x .
Find the value of x .

- A** 10
- B** 15
- C** 20
- D** 25

9. Diberi bahawa $2rt - t = \frac{w}{3t}$ ungkapkan t dalam sebutan r dan w .

Given that $2rt - t = \frac{w}{3t}$, express t in terms of r and w .

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

B $t = \sqrt{\frac{w}{6r-1}}$

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

D $t = \sqrt{\frac{3w}{6r-1}}$

10. Antara titik berikut, yang manakah terletak pada paksi-x?

Which of the following points is located on the x-axis?

A (3, 2)

B (-2, 0)

C (0, 5)

D (5, -5)

11. Tentukan pintasan-y bagi garis lurus $2y - x = 3$.

Determine the y-intercept of a straight line $2y - x = 3$.

A $\frac{3}{2}$

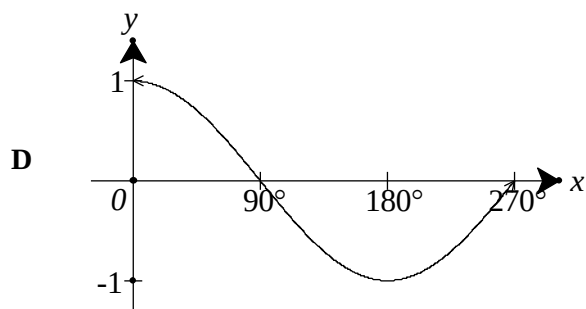
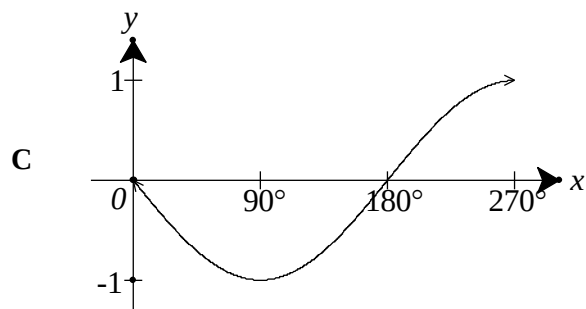
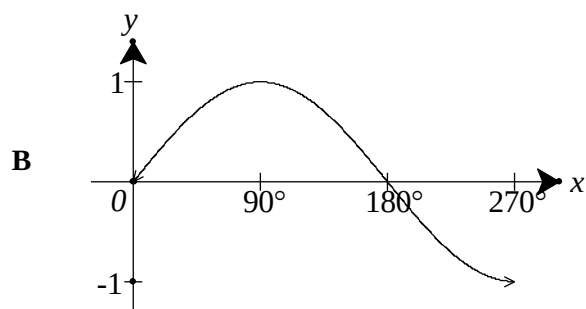
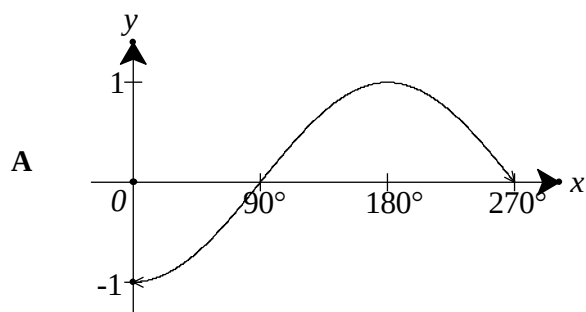
B 0

C $\frac{2}{3}$

D -3

12. Graf manakah yang mewakili sebahagian daripada $y = \sin x$?

Which graph represents part of $y = \sin x$?



13. Mod bagi 10, 14, 15, 17, 11, 13, 14 ialah

The mode for 10, 14, 15, 17, 11, 13, 14 is

- A 10
- B 14
- C 15
- D 17

14. Sebuah basikal bergerak sejauh 56 m dalam masa 16 saat. Hitung laju, dalam m/s, basikal itu.

A bicycle travels 56 m in 16 seconds. Calculate the speed, in m/s, of the bicycle.

- A 3.2
- B 3.5
- C 3.6
- D 3.8

15. Dalam Rajah 15, KLM ialah segitiga bersudut tegak dan $KN = NL$.
In Diagram 15, KLM is a right-angled triangle and $KN = NL$.

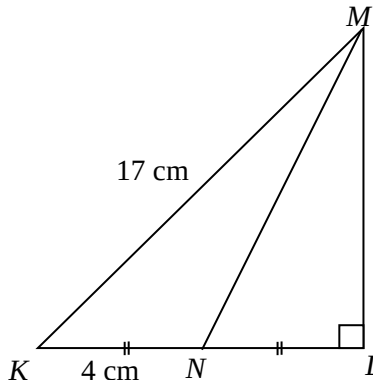


Diagram 15
Rajah 15

Cari panjang MN

Find the length of MN .

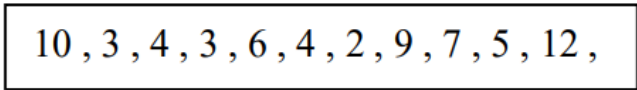
- A** 11
B 15.5
C 16.5
D 19
16. Diberi $2^p \times 2^3 = 64$. Cari nilai p .
Given that $2^p \times 2^3 = 64$. Find the value of p .
- A** 3
B 4
C 8
D 9

17. Zamri membuat pinjaman peribadi sebanyak RM 50 000 daripada sebuah bank untuk membeli sebuah kereta terpakai. Bank mengenakan kadar faedah sebanyak 5.2% setahun. Hitung bayaran ansuran bulanan jika tempoh pinjaman ialah 5 tahun.

Zamri made a personal loan of RM 50 000 from a bank to buy used car. The bank charged the interest rate of 5.2% annum. Calculate the monthly instalment if the loan period is 5 years.

- A RM 833.30
- B RM 876.70
- C RM 1050.00
- D RM 1083.30

18. Cari julat bagi data yang diberi dalam Rajah 18.
Find the range of the data given in Diagram 18.



Rajah / Diagram 18

- A 7
- B 8
- C 9
- D 10

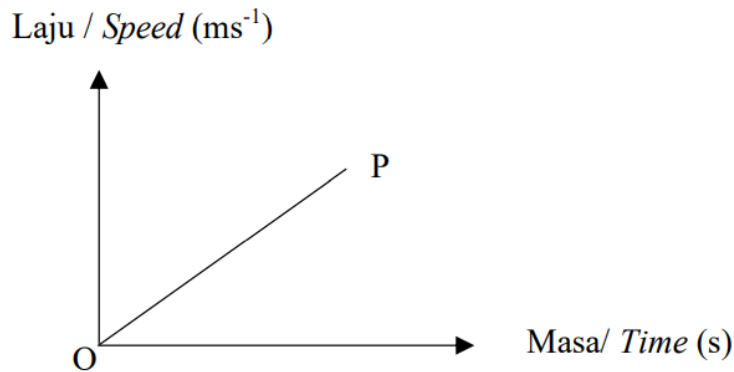
19. Kebarangkalian Kam Seng lulus dalam mata pelajaran Sains dan Matematik masing-masing ialah 0.78 dan 0.56. Hitung kebarangkalian bahawa sekurang-kurangnya lulus satu mata pelajaran.

The probabilities of Kam Seng passing in Science and Mathematics subjects are 0.78 and 0.56 respectively. Calculate the probability that at least one subject is passed.

- A 0.9032
- B 0.5336
- C 0.4664
- D 0.4368

20. Rajah di bawah menunjukkan sebuah graf laju-masa.

The diagram below shows a speed-time graph.



Berdasarkan rajah tersebut, apakah yang diwakili oleh kecerunan OP?

Based on the diagram, what is represented by the gradient OP?

- A Jarak / Distance
- B Laju / Speed
- C Pecutan / Acceleration
- D Nyahpecutan / Deceleration

21. Sebuah segi tiga mempunyai luas 36cm^2 dan luas bagi lukisan berskalanya ialah 144 cm^2 . Jika skala yang digunakan ialah $1 : x$, cari nilai x .

A triangle has an area of 36 cm^2 and the area of the scale drawing is 144 cm^2 . If the scale used is $1 : x$, find the value of x .

A $1 : \frac{1}{2}$

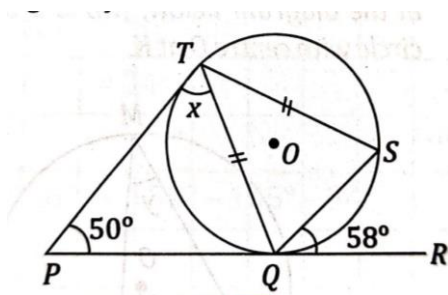
B $\frac{1}{2} : 1$

C $2 : 1$

D $1 : 2$

22. Rajah di bawah menunjukkan sebuah bulatan berpusat O. PQR ialah tangen kepada bulatan itu.

The diagram below shows a circle with centre O. PQR is the tangent of the circle.



Cari nilai x .

Find the value of x .

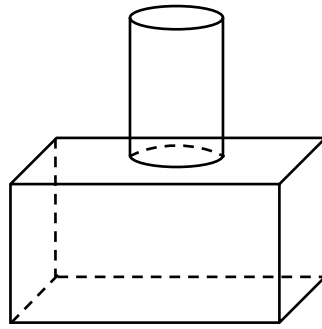
A 58°

B 61°

C 65°

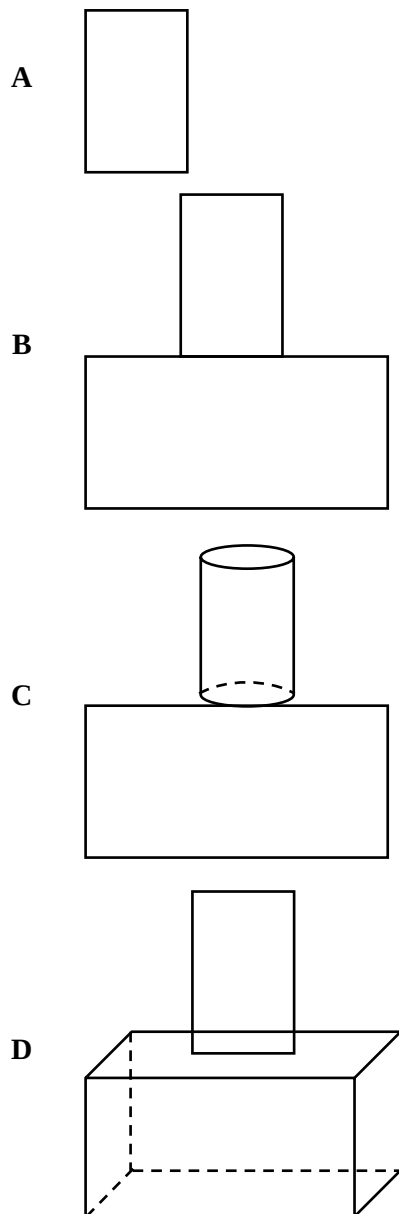
D 69°

23. Rajah 19 menunjukkan sebuah pepejal gabungan yang terdiri daripada kuboid dan silinder.
Diagram 19 shows a composite solid consisting of a cuboid and cylinder.



Rajah / Diagram 19

Tentukan lukisan dongakan hadapan bagi gabungan pepejal di atas.
Determine the front elevation drawing for the above solid combination.



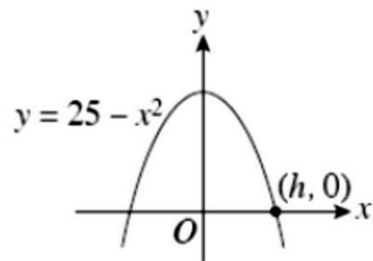
24. Diberi bahawa set $J = \{3,4,5,7\}$ dan set $K = \{1,2,4,5,8\}$. Senaraikan semua unsur bagi set $J \cap K$.

It is given that set $J = \{3,4,5,7\}$ and set $K = \{1,2,4,5,8\}$. List all the elements of set $J \cap K$.

- A $\{4,5\}$
- B $\{3,4,5\}$
- C $\{3,4,5,6,7\}$
- D $\{1,2,3,4,5,7,8\}$

25. Rajah di bawah menunjukkan graf suatu fungsi.

The diagram shows the graph of a function.



Cari nilai h .

Find the value of h .

- A -5
- B -3
- C 5
- D 6

26. Dalam suatu ujian, Aida mendapat markah 114_8 dan 1100_4 bagi subjek Sains dan Matematik. Berapakah purata markah yang diperoleh oleh Aida, dalam asas sepuluh?

In a test, Aida obtained 114_8 and 1100_4 marks in Science and Mathematics subjects. What is the mean mark obtained by Aida, in base ten?

- A 76
- B 78
- C 80
- D 82

27. Antara berikut, yang manakah pernyataan palsu?

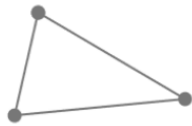
Which of the following is a false statement?

- A 4 atau 8 ialah faktor bagi 20.
4 or 8 is a factor of 20.
- B Semua nombor perdana mempunyai dua faktor sahaja.
All prime numbers have two factors only.
- C 1 ialah faktor bagi semua integer.
1 is a factor of all integers.
- D Sebilangan poligon mempunyai hasil tambah sudut peluaran 360° .
Some polygons have the sum of exterior angle of 360° .

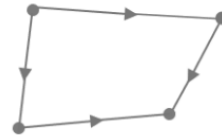
28. Antara berikut yang manakah ialah graf mudah?

Which of the following is a simple graph?

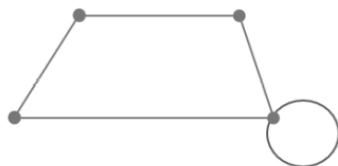
A



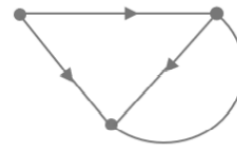
C



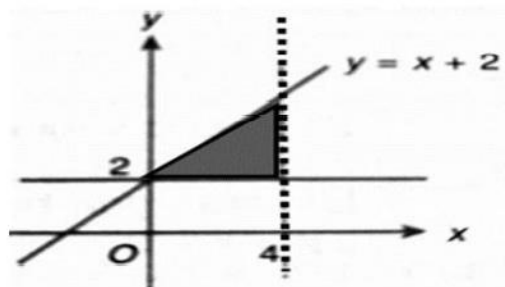
B



D



29.



Dalam rajah di atas menunjukkan rantau berlorek itu ditakrifkan oleh tiga ketaksamaan.

Antara yang berikut yang manakah benar?

In the above diagram shows the shaded region is defined by three inequalities. Which of the following is true?

- I Titik (4,2) terletak di dalam rantau berlorek / *Point (4,2) defines in the shaded region.*
- II Titik (0,2) tidak terletak di dalam rantau berlorek/*Point (0,2) not defines in the shaded Region*
- III Tiga ketaksamaan yang mentakrifkan rantau berlorek itu ialah $y \geq 2$, $x < 4$ dan $y \leq x + 2$

Three inequalities defines in shaded region are $y \geq 2$, $x < 4$ dan $y \leq x + 2$

- A I dan II sahaja/ I and II only
- B I dan III sahaja/ I and III only
- C III sahaja/ III only
- D II dan III sahaja/ I and III only

30. Antara komponen berikut, yang manakah terlibat dalam permodelan matematik?

Which of the following components are involved in mathematical modeling?

- I Memurnikan mode matematik
Reffining the mathematical modeling
- II Membuat anggaran dan mengenal pasti hipotesis
Making estimation and identifying hypothesis
- III Mengenal pasti dan mendefinisikan masalah
Identifying and defining the problem
- IV Melaporkan dapatan
Report the findings

- A 1, II, dan III
- B I, II dan IV
- C I, III dan IV
- D II, III, dan IV

31. Jadual kekerapan longgokan di bawah menunjukkan saiz ketam yang dijual di sebuah pasar.

The cumulative frequency table below shows the sizes of crabs sold in a market. *Which of the following graph is tree?*

Saiz Size (cm)	Bilangan ketam Number of crabs	Kekerapan longgokan Cumulative frequency
22 – 24	9	9
25 – 27	27	36
28 – 30	x	47
31 – 33	15	62
34 – 36	4	66

Cari nilai x .

Find the value of x .

- A 11
- B 13
- C 15
- D 16

32. Diberi bahawa m berubah secara langsung dengan kuasa dua n dan $m = 18$ apabila $n = 3$.

Hitung nilai n apabila $m = 32$

Given that m varies directly with the squares of n and $m = 18$ when $n = 3$. Calculate the value of n when $m = 32$.

- A 32
- B 18
- C 4
- D 2

33. Puan Saliha menerima pendapatan aktif sebanyak RM6850 dan pendapatan pasif sebanyak RM1500 dalam sebulan. Dia mempunyai perbelanjaan tetap sebanyak RM2850 dan perbelanjaan tidak tetap sebanyak RM980 setiap bulan. Hitung aliran tunai bulanan Puan Saliha.

Puan Saliha received an active income of RM6850 and a passive income of RM1500 in a month. She has the fixed expenses of RM2850 and the variable expenses of RM980 every month. Calculate Puan Saliha's monthly cash flow.

- A RM3020
- B RM4810
- C RM1520
- D RM4520

34. $\begin{pmatrix} 2 & 4 \\ -3 & 7 \end{pmatrix} - 3\begin{pmatrix} 5 & -2 \\ -4 & 1 \end{pmatrix} + \begin{pmatrix} -2 & -3 \\ 4 & -1 \end{pmatrix} =$

- A $\begin{pmatrix} -15 & 9 \\ 13 & 3 \end{pmatrix}$
- B $\begin{pmatrix} -15 & -2 \\ 13 & 3 \end{pmatrix}$

- C $\begin{pmatrix} -15 & 7 \\ 13 & 3 \end{pmatrix}$
- D $\begin{pmatrix} -15 & -7 \\ 13 & 3 \end{pmatrix}$

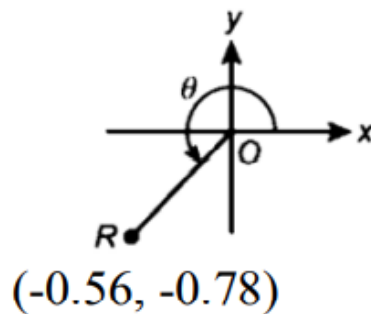
35. Antara berikut yang manakah risiko yang biasa dihadapi oleh seorang atlet sukan?

Which of the following is a common risk that can be faced by a sports athlete?

- A Gagal dalam peperiksaan
Failed in examination
- B Tercekik tulang ikan
Choked on fish bones
- C Jatuh dalam bilik air
Falling in the bathroom
- D Cedera semasa acara sukan
Injured during sports events

36. Rajah di bawah menunjukkan titik R diplotkan pada suatu satah Cartes.

The diagram below shows point R plotted on a Cartesian plane.



Cari nilai θ .

Find the value of θ .

- A $215^{\circ} 40'$
- B $224^{\circ} 19'$
- C $234^{\circ} 19'$
- D $254^{\circ} 19'$

37. Adelia dan rakannya makan pagi di sebuah restoran. Mereka telah makan dua pinggan mee goreng, enam biji bebola ayam dan dua gelas teh ais.

Adelia and her friend had breakfast at a restaurant.

They had two plates of fried noodles, six chicken balls and two glass of iced tea.

Jadual di bawah menunjukkan sebahagian harga makanan dan minuman di restoran itu.

The table below shows a part of the price of the food and drink at the restaurant.

Makanan dan Minuman <i>Food and Drink</i>	Harga <i>Price</i>
Mee goreng <i>Fried noodles</i>	RM4.00 / pinggan RM4.00 / <i>plate</i>
Nasi goreng <i>Fried rice</i>	RM4.50 / pinggan RM4.50 / <i>plate</i>
Bebola ayam <i>Chicken ball</i>	RM0.20 / biji RM0.20 / <i>each</i>
Teh ais <i>Iced tea</i>	RM2.50 / gelas RM2.50 / <i>glass</i>

Diberi bahawa restoran itu mengenakan cukai perkhidmatan 6%. Hitung jumlah bil mereka.

It is given that the restaurant charges 6% on service tax. Calculate their total bill.

- A RM11.20
- B RM14.20
- C RM15.05
- D RM16.10

38. Diberi $x = 1.5 \times 10^3$ dan $y = 3.2 \times 10^4$. Kirakan nilai bagi $2xy$ dalam bentuk piawai.

Given $x = 1.5 \times 10^3$ and $y = 3.2 \times 10^4$. Find the value of $2xy$ in standard form.

- A 4.8×10^{-7}
- B 4.8×10^7
- C 9.6×10^{-7}
- D 9.6×10^7

39. Maklumat di bawah menunjukkan Panjang sisi objek dan panjang sisi imejnya di bawah suatu pembesaran.

The information below shows the length of side of an object and the length of side of its image under an enlargement

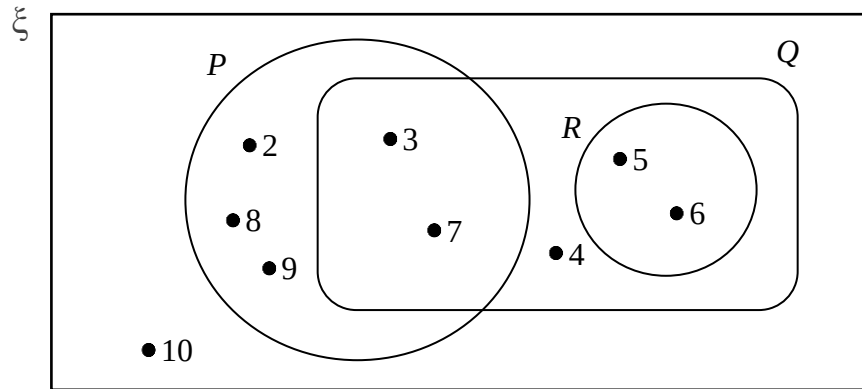
Panjang sisi objek = 20 cm
Length of side of object
Panjang sisi imej = 180 cm
Length of side of image

Berdasarkan maklumat di atas , hitung faktor skala.

Based on the information above, calculate the scale factor.

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

40. Rajah 40 menunjukkan gambar rajah Venn dengan set semesta, $\xi = P \cup Q \cup R$.
 Diagram 40 shows a Venn diagram with the universal set, $\xi = P \cup Q \cup R$.



Rajah / Diagram 40

Senaraikan semua elemen set Q'

List all the elements of set Q'

- A { 2, 8, 9 }
- B { 2, 8, 9, 10 }
- C { 2, 5, 6, 8, 9 }
- D { 2, 5, 6, 8, 9, 10 }

KERTAS SOALAN TAMAT
END OF QUESTION PAPER

DISEDIAKAN OLEH,

(PN SITI RAHAYU BINTI ARIFIN)
GURU MATAPELAJARAN

DISEMAK OLEH,

(PN. HANIZAH BINTI ABU SHAHID)
GURU KANAN SAINS DAN MATEMATIK

DISAHKAN OLEH,

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