

SULIT



PEJABAT PELAJARAN DAERAH
SEGAMAT, JOHOR

PEPERIKSAAN AKHIR TAHUN SETARA 2009
TINGKATAN EMPAT
MATHEMATICS

1449/1

Kertas 1
Oktober

1¼ jam
minit

Satu jam lima belas

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

1. *Kertas soalan ini adalah dalam dwibahasa.*
2. *Soalan dalam bahasa Inggeris mendahului soalan yang sepadan dalam Bahasa Melayu.*
3. *Calon dikehendaki membaca maklumat di halaman 2 kertas soalan ini.*

Kertas soalan ini mengandungi 23 halaman bercetak.

INFORMATION FOR CANDIDATES
MAKLUMAT UNTUK CALON

1. This question paper consists of **40** questions.
Kertas soalan ini mengandungi 40 soalan.
2. Answer **all** questions.
Jawab semua soalan.
3. Answer each question by blackening the correct space on the objective answer sheet.
Jawab setiap soalan dengan menghitamkan ruangan yang betul pada kertas jawapan objektif.
4. Blacken only **one** space for each question.
Hitamkan satu ruangan sahaja bagi setiap soalan.
5. If you wish to change your answer, erase the blackened mark that you have done. Then blacken the space for the new answer.
Sekiranya anda hendak menukar jawapan, padamkan tanda yang telah dibuat. Kemudian hitamkan jawapan yang baru.
6. The diagrams in the questions provided are not drawn to scale unless stated.
Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan.
7. A list of formulae is provided on pages 3 to 5.
Satu senarai rumus disediakan di halaman 3 hingga 5.
8. A booklet of four-figure mathematical tables is provided.
Sebuah buku sifir matematik empat angka disediakan.
9. You may use a non-programmable scientific calculator.
Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogram.

MATHEMATICAL FORMULAE RUMUS MATEMATIK

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

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

RELATIONS PERKAITAN

1	$a^m \times a^n = a^{m+n}$		
2	$a^m \div a^n = a^{m-n}$	10	Pythagoras Theorem <i>Teorem Pithagoras</i>
3	$(a^m)^n = a^{mn}$		$c^2 = a^2 + b^2$
4	$A^{-1} = \frac{1}{ad-bc} \begin{pmatrix} d & -b \\ -c & a \end{pmatrix}$	11	$P(A) = \frac{n(A)}{n(S)}$
5	Distance / <i>Jarak</i> $= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$	12	$P(A') = 1 - P(A)$
6	Midpoint / <i>Titik tengah</i> $(x, y) = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$	13	$m = \frac{y_2 - y_1}{x_2 - x_1}$
7	Average speed = $\frac{\text{distance travelled}}{\text{time taken}}$ <i>Purata laju = $\frac{\text{jarak yang dilalui}}{\text{masa yang diambil}}$</i>	14	$m = -\frac{y\text{-intercept}}{x\text{-intercept}}$
8	Mean = $\frac{\text{sum of data}}{\text{number of data}}$ <i>Min = $\frac{\text{hasil tambah nilai data}}{\text{bilangan data}}$</i>		$m = -\frac{p \text{ int asan } - y}{p \text{ int asan } - x}$
9	Mean = $\frac{\text{sum of (class mark} \times \text{frequency)}}{\text{sum of frequencies}}$		
	<i>Min = $\frac{\text{hasil tambah (nilai titik tengah} \times \text{kekerapan)}}{\text{hasil tambah kekerapan}}$</i>		

**[Lihat sebelah
SULIT**

SHAPES AND SPACE
BENTUK DAN RUANG

- 1 Area of trapezium = $\frac{1}{2} \times \text{sum of parallel sides} \times \text{height}$
Luas trapezium = $\frac{1}{2} \times \text{hasil tambah dua sisi selari} \times \text{tinggi}$
- 2 Circumference of circle = $\pi d = 2\pi r$
Lilitan bulatan = $\pi d = 2\pi j$
- 3 Area of circle = πr^2
Luas bulatan = πj^2
- 4 Curved surface area of cylinder = $2\pi r h$
Luas permukaan melengkung silinder = $2\pi j t$
- 5 Surface area of sphere = $4\pi r^2$
Luas permukaan sfera = $4\pi j^2$
- 6 Volume of right prism = cross sectional area \times length
Isipadu prisma tegak = luas keratan rentas \times panjang
- 7 Volume of cylinder = $\pi r^2 h$
Isipadu silinder = $\pi j^2 t$
- 8 Volume of cone = $\frac{1}{3} \pi r^2 h$
Isipadu kon = $\frac{1}{3} \pi j^2 t$
- 9 Volume of sphere = $\frac{4}{3} \pi r^3$
Isipadu sfera = $\frac{4}{3} \pi j^3$
- 10 Volume of right pyramid = $\frac{1}{3} \times \text{base area} \times \text{height}$
Isipadu piramid tegak = $\frac{1}{3} \times \text{luas tapak} \times \text{tinggi}$
- 11 Sum of interior angles of a polygon = $(n - 2) \times 180^\circ$
Hasil tambah sudut pedalaman poligon = $(n - 2) \times 180^\circ$

12

$$\frac{\text{arc length}}{\text{circumference of circle}} = \frac{\text{angle subtended at centre}}{360^\circ}$$

$$\frac{\text{panjang lengkuk}}{\text{lilitan bulatan}} = \frac{\text{sudut pusat}}{360^\circ}$$

13

$$\frac{\text{area of sector}}{\text{area of circle}} = \frac{\text{angle subtended at centre}}{360^\circ}$$

$$\frac{\text{luas sektor}}{\text{luas bulatan}} = \frac{\text{sudut pusat}}{360^\circ}$$

14

$$\text{Scale factor, } k = \frac{PA'}{PA}$$

$$\text{Faktor skala, } k = \frac{PA'}{PA}$$

15

$$\text{Area of image} = k^2 \times \text{area of object}$$

$$\text{Luas imej} = k^2 \times \text{luas objek}$$

- 1 Round off 0.05027 correct to three significant figures.

Bundarkan 0.05027 betul kepada tiga angka bererti.

- A 0.05
B 0.050
C 0.0503
D 0.05030

2. Express 406 000 in standard form.

Ungkapkan 406 000 dalam bentuk piawai.

- A 4.06×10^{-5}
B 4.06×10^5
C 406×10^{-5}
D 406×10^5

3. $6.7 \times 10^8 - 4.7 \times 10^7 =$

- A 2×10^1
B 2×10^8
C 6.23×10^8
D 6.23×10^7

4. The length and the width of a rectangular piece of land is 54m and 30.5m respectively. Calculate the area, in cm^2 , of the land.

Panjang dan lebar bagi segiempat tepat sebuah tanah ialah 54m dan 30.5m. Kirakan luas dalam cm^2 bagi tanah tersebut.

- A 1.647×10^3
B 1.647×10^7
C 1.647×10^5
D 1.647×10^9

5. $(3p + 4)(2p - 5) =$

- A $6p^2 - 7p + 20$
B $6p^2 - 7p - 20$
C $6p^2 - 23p + 20$
D $6p^2 - 23p - 20$

6. Express the quadratic equation, $4p^2 = p(2p-1)$ in general form.

Ungkapkan persamaan kuadratik, $4p^2 = p(2p-1)$ dalam bentuk am.

A $p - 2p^2 = 0$

C $2p^2 - p = 0$

B $2p^2 + p = 0$

D $2p^2 - p - 3 = 0$

7 Diagram 1 shows a regular hexagon PQRSTU. UQV and TSW are straight lines.

Rajah 1 menunjukkan sebuah heksagon sekata PQRSTU. UQV dan TSW ialah garis lurus.

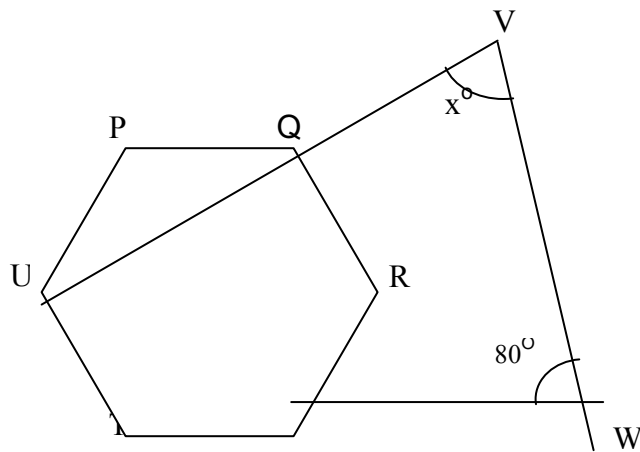


Diagram 1
Rajah 1

Find the value of x .

Cari nilai x .

A 40

C 70

B 60

D 80

- 8 Diagram 2 shows a circle, EMF, centre O. LMN is a tangent to the circle at M.
Rajah 2 menunjukkan sebuah bulatan, EMF, berpusat O. LMN ialah tangen kepada bulatan itu di M.

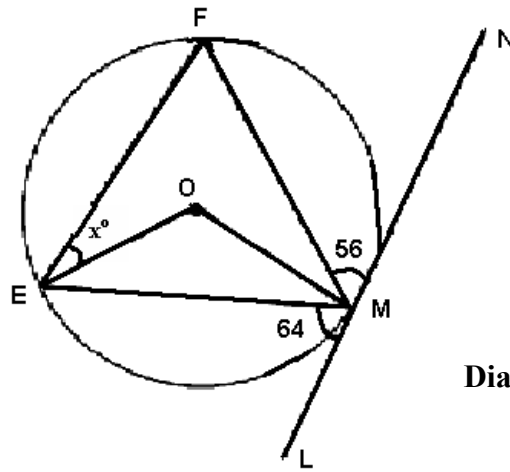


Diagram 2 / Rajah 2

Find the value of x .
Cari nilai x .

- A 36
 B 30

- C 25
 D 10

9.

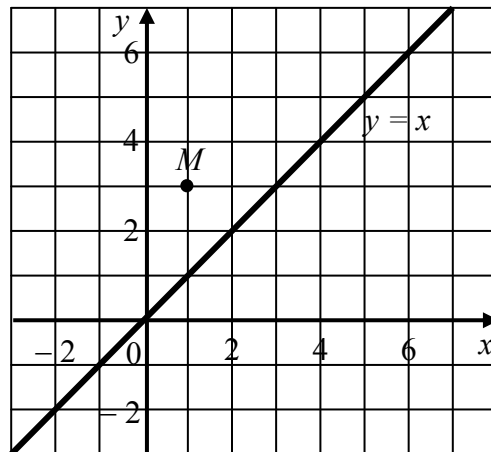


Diagram 3 / Rajah 3

In Diagram 3 above, $y = x$ is the axis of reflection. The coordinate of the image of M under the reflection is

Dalam Rajah 3 di atas, $y = x$ adalah paksi pantulan. Koordinat imej bagi titik M di bawah pantulan ini adalah

- A (1, -1)

- C (3, 1)

- B (1, 3)

- D (5, 3)

10. In Diagram 4 below, triangle CDE is the image of triangle ABC under an enlargement.
Dalam Rajah 4 di bawah, segitiga CDE adalah imej bagi segitiga ABC di bawah suatu pembesaran.

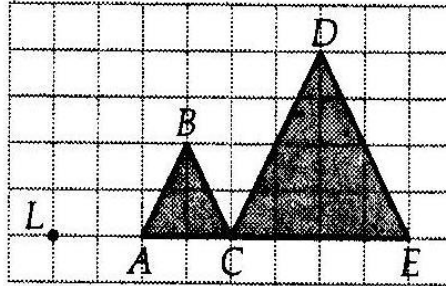


Diagram 4/Rajah 4

The centre of the enlargement and its scale factor are
Pusat pembesaran dan faktor skalanya adalah

	Centre of enlargement <i>Pusat pembesaran</i>	Scale factor <i>Faktor skala</i>
A	L	2
B	L	$\frac{1}{2}$
C	C	2
D	C	$\frac{1}{2}$

11.

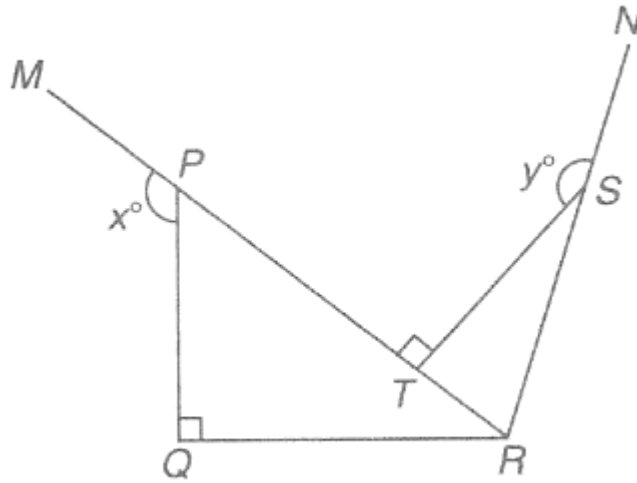


Diagram 5 / Rajah 5

In Diagram 5, MPTR and NSR are straight lines. It is given that $PQ = 18$ cm, $PT = 26$ cm, $RS = 10$ cm and $\cos x^\circ = -\frac{9}{16}$. Calculate the value of $\tan y^\circ$.

Pada diagram di atas, MPTR dan NSR adalah garis lurus. Diberi $PQ = 18$ cm, $PT = 26$ cm, $RS = 10$ cm dan $\cos x^\circ = -\frac{9}{16}$. Hitung nilai $\tan y^\circ$.

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

C $\frac{3}{4}$

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

D $\frac{4}{3}$

12. It is given that $\cos x = -0.8660$ and $180^\circ \leq x \leq 360^\circ$.
Find the value of x .

*Diberi nilai $\cos x = -0.8660$ dan $180^\circ \leq x \leq 360^\circ$.
Cari nilai x .*

- | | |
|----------------------|----------------------|
| A 210° | C 300° |
| B 240° | D 330° |

- 13 Diagram 6 shows the graph of $y = \sin x^\circ$
Rajah 6 di bawah menunjukkan graf $y = \sin x^\circ$

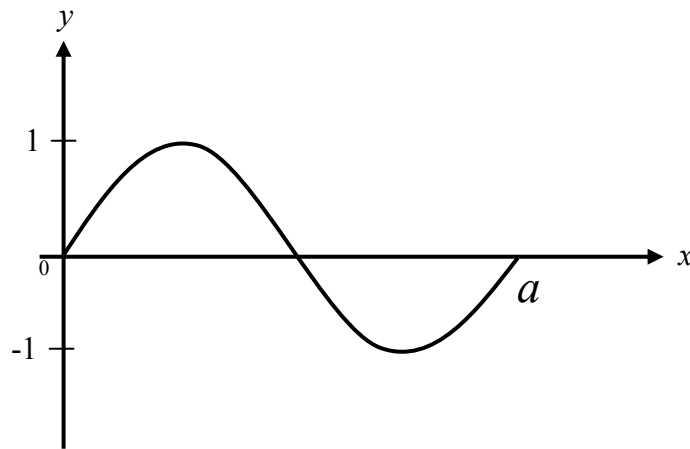


Diagram 6 / Rajah 6

Find the value of a .
Cari nilai a

- | | |
|----------------------|----------------------|
| A 90° | C 270° |
| B 180° | D 360° |

14.

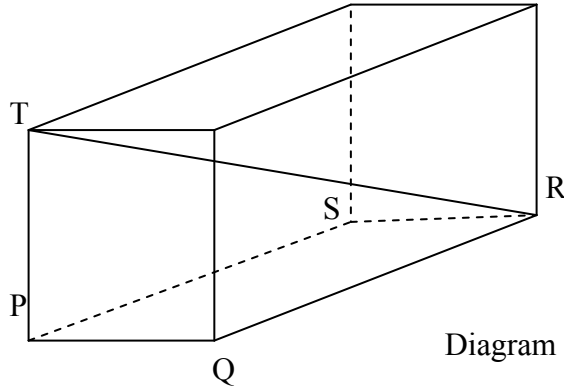
Diagram 7 / *Rajah 7*

Diagram 7 shows a cuboid. The base of the cuboid, PQRS, is on a horizontal ground. The angle between line RT and the base PQRS is

Rajah 7 menunjukkan sebuah kuboid. Tapak bagi kuboid, PQRS terletak di atas permukaan yang mendatar. Sudut di antara garis RT dan tapak PQRS adalah

A \angle TRQC \angle TPQB \angle TRPD \angle TRS

15.

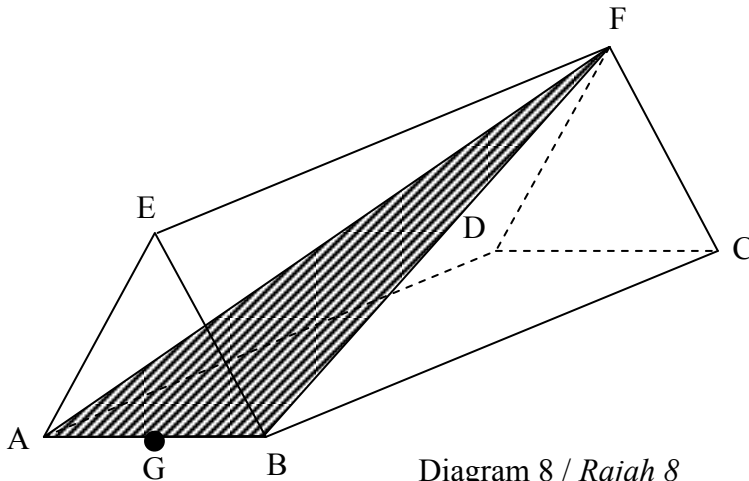
Diagram 8 / *Rajah 8*

Diagram 8 shows a right prism with a rectangular base ABCD. The equilateral triangle ABE is the uniform cross-section of the prism. Point G is the midpoint of side AB. State the angle between plane ABF and plane ABE.

Rajah 8 menunjukkan sebuah prisma tegak dengan tapak berbentuk segiempat tepat ABCD. Segitiga sisi sama ABE ialah keratan rentas seragam prisma itu. Titik G adalah titik tengah bagi AB. Nyatakan sudut di antara satah ABF dan satah ABE.

A \angle EABC \angle EGBB \angle EFGD \angle EGF

16. Given the angle of depression of X, from the top of a hill to a boat is 30° and the height of the hill is 2887 m. Calculate the horizontal distance of the boat to the hill.

Sudut tunduk X dari puncak ke sampan adalah 30° . Tinggi bukit adalah 2887m. Hitungkan jarak mengufuk sampan dari bukit.

- A. 2000 m
B. 3000 m
C. 3500 m
D. 5000 m
17. In Diagram 9, KL and PQ are two vertical poles standing on a horizontal ground.

Rajah 9 menunjukkan KL dan PQ adalah dua batang tiang tegak yang terletak pada satu permukaan mengufuk.

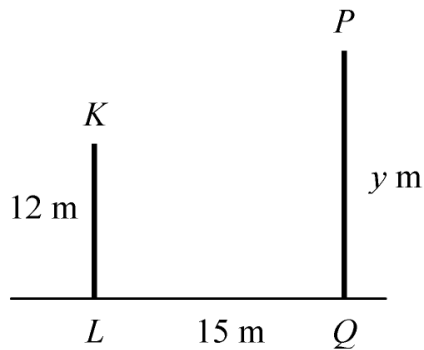


Diagram 9 / Rajah 9

The angle of elevation of P from K is 22° . The value of y is
Sudut dongak P dari puncak K ialah 22° . Nilai y ialah

- A. 18.06
B. 16.45
C. 15.84
D. 14.38
18. Which of the following statement is true?
Antara berikut, yang manakah penyataan yang benar?
- A $m + m = m^2$ or $2m \times m = 3m$
 $m + m = m^2$ atau $2m \times m = 3m$
- B $25 + 5 = 35$ or $2^3 + 9 = 9$
 $25 + 5 = 35$ atau $2^3 + 9 = 9$
- C $-5 > -4$ and $5 > 4$
 $-5 > -4$ dan $5 > 4$
- D $4 - 5 < 0$ and $\sqrt[3]{8} + 3 = 5$
 $4 - 5 < 0$ dan $\sqrt[3]{8} + 3 = 5$

19. $6pq - 3(1 - pq) =$

A. $3pq - 3$

B. $9pq - 3$

C. $7pq - 3$

D. $8pq - 3$

20. $\frac{2+x}{2x} - \frac{y-x}{xy} =$

A. $\frac{y+2}{2y}$

B. $\frac{y-2}{2y}$

C. $\frac{y-1}{y}$

D. $\frac{y+1}{y}$

21. Given that $y = \frac{w+3}{2w}$, express w in terms of y .

Diberi $y = \frac{w+3}{2w}$, ungkapkan w dalam sebutan y .

A. $w = \frac{3}{y}$

B. $w = \frac{3}{2y+1}$

C. $w = \frac{3}{1-2y}$

D. $w = \frac{3}{2y-1}$

22. Given that $p+2 = \frac{2(1-4p)}{2}$, calculate the value of p .

Diberi bahawa $p+2 = \frac{2(1-4p)}{2}$, hitung nilai p .

A. $-\frac{1}{2}$

B. $-\frac{1}{5}$

C. $\frac{1}{10}$

D. $\frac{1}{6}$

23. Simplify $\frac{(3m^{-1})^2}{m^{-3}}$.

Ringkaskan $\frac{(3m^{-1})^2}{m^{-3}}$.

A. $6m^{-5}$

C. $9m^{-5}$

B. $6m^{-1}$

D. $9m$

24. Given that $(\frac{1}{9})^n \times 27 = 3^{2n}$, find the value of n.

Diberi $(\frac{1}{9})^n \times 27 = 3^{2n}$, carikan nilai bagi n.

A. $-\frac{1}{2}$

C. $\frac{3}{4}$

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

D. $\frac{4}{3}$

25. The solution for $4x + 5 < 1 - \frac{2x}{3}$ is

Penyelesaian bagi $4x + 5 < 1 - \frac{2x}{3}$ ialah

A. $x < -\frac{7}{3}$

C. $x < -\frac{1}{3}$

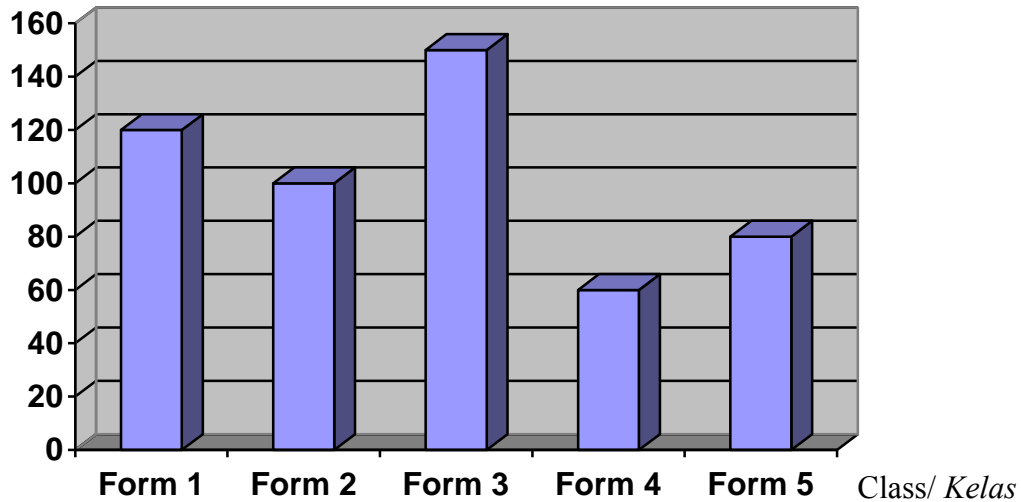
B. $x < -\frac{6}{7}$

D. $x < -\frac{2}{7}$

26. The bar chart shows the number of students in each form in a school. Which form has twice the number of those students in form 4 ?

Carta bar menunjukkan bilangan pelajar bagi setiap tingkatan dalam sebuah sekolah. Tingkatan mana yang bilangan pelajarinya adalah dua kali ganda bilangan pelajar dalam tingkatan 4 ?

Frequency / *kekerapan*



- A. Form 1
B. Form 2
C. Form 3
D. Form 5

27. Diagram 10 shows a set of data where k represents an integer.

Rajah 10 menunjukkan satu set data dengan keadaan k mewakili suatu integer.

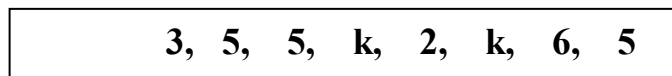


Diagram 10 / *Rajah 10*

The mode and mean of the data are both 5. Two integers, 6 and 8, are added to the set. Calculate the median of the new set of data.

Kedua-dua mod dan min bagi data itu ialah 5. Dua integer, 6 dan 8, ditambah kepada set itu. Hitung median bagi set data yang baru.

- A. 5.2
B. 5.3
C. 5.4
D. 5.5

28. Diagram 11 is a pie chart showing the number of members in three clubs.

Rajah 11 ialah carta pai yang menunjukkan bilangan ahli bagi tiga kelab.

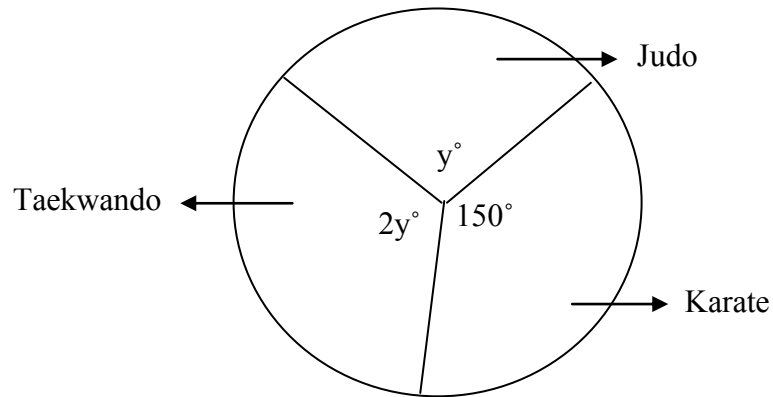


Diagram 11 /Rajah 11

The Karate Club has 300 members. How many members are in the Taekwondo Club ?

Bilangan ahli Kelab Karate ialah 300 orang. Berapakah bilangan ahli kelab Taekwando ?

- A. 70
B. 140
C. 210
D. 280

29. Table 1 is a frequency table which shows the points scored by 25 competitors in an archery competition.

Jadual 1 ialah jadual kekerapan yang menunjukkan mata yang diperolehi 25 peserta dalam satu pertandingan memanah.

Points/ Mata	Frequency/ Kekerapan
41 - 50	3
51 - 60	4
61 - 70	6
71 -80	7
81 - 90	5

Table 1/ Jadual 1

Calculate the mean score of each competitor.

Hitung skor min yang dikutip oleh seorang peserta.

- A. 67.3
B. 67.8
C. 68.3
D. 84.0

30. The Venn diagram shows all elements of sets A ,sets B and sets C.

Gambar rajah Venn yang menunjukkan unsur-unsur bagi set A, set B dan set C.

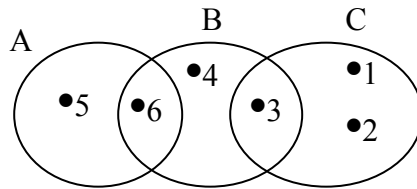


Diagram 12 / *Rajah 12*

If the universal sets $\xi = A \cup B \cup C$, then set B' is

Jika set semesta $\xi = A \cup B \cup C$, maka set B' ialah

A { 1, 2 }

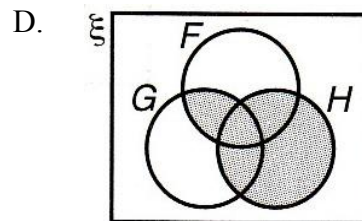
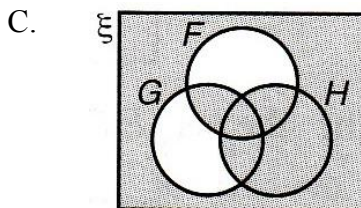
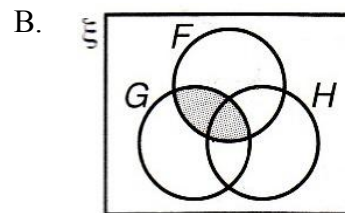
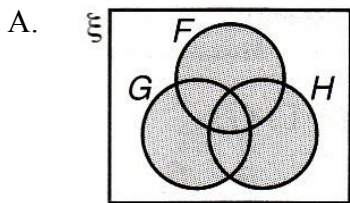
C { 1, 2, 5 }

B { 3, 6 }

D { 3, 4, 6 }

31. Which of the Venn diagrams below represents the set $(F \cap G) \cup H$?

Manakah diantara Gambarajah Venn berikut yang mewakili set $(F \cap G) \cup H$?



32. Given that the universal set $\xi = M \cup N \cup L$,
 Diberi bahawa set semesta $\xi = M \cup N \cup L$,

Set $M = \{B, L, U, E\}$,

Set $N = \{P, I, N, K\}$,

Set $L = \{B, L, A, C, K\}$.

Set $(M \cup N) \cap L'$ is

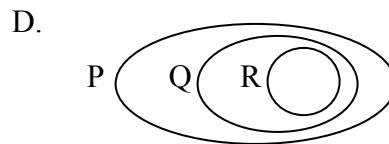
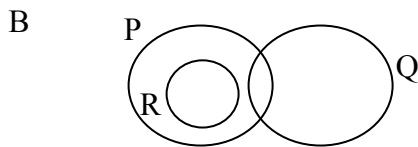
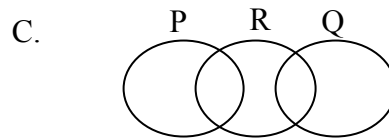
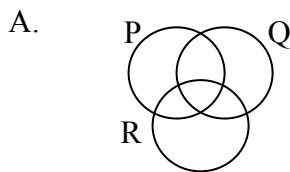
- A $\{B, L, K\}$
 B $\{B, L, U, E, P, I, N, K\}$
 C $\{U, E, P, I, N\}$,
 D $\{\}$

33. Given that $\xi = P \cup Q \cup R$, $P = \{2,3,4,5,6\}$, $Q = \{6,7,8,9\}$ dan $R = \{4,5\}$.

Which represents their relationship among sets P, Q dan R is true ?

Diberi $\xi = P \cup Q \cup R$, $P = \{2,3,4,5,6\}$, $Q = \{6,7,8,9\}$ dan $R = \{4,5\}$.

Antara berikut yang manakah mewakili hubungan set P, Q dan R dengan betul?

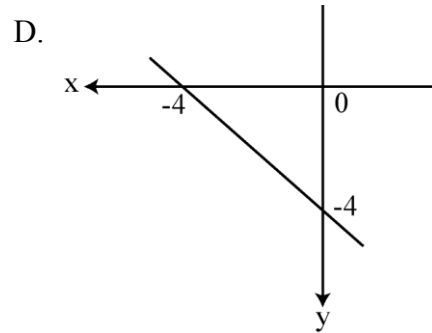
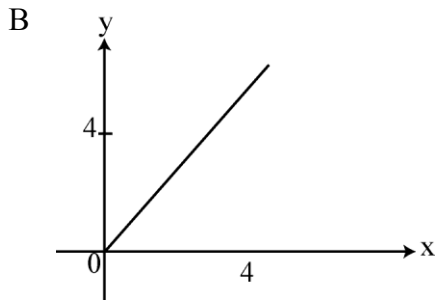
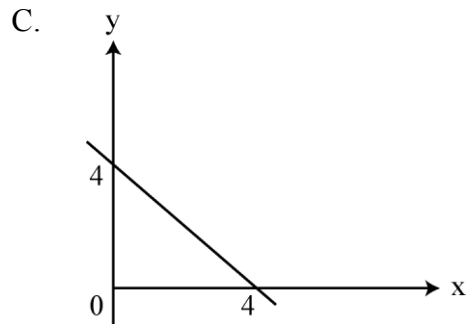
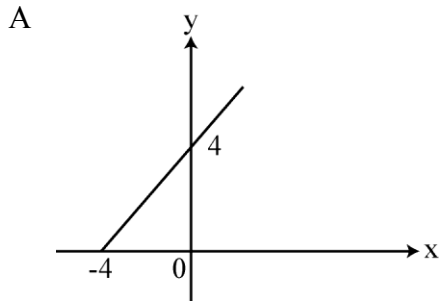


34. Given that point A (2, 3), point B (5, k) and the gradient of $AB = 4$. Find the value of k.
 Diberi titik A(2,3), titik B (5, k) dan kecerunan garis $AB = 4$. Cari nilai k.

- A. 5
 B. 9
 C. 12
 D. 15

35. Which of the following graphs represents $y = x + 4$?

Antara berikut, yang manakah mewakili graf $y = x + 4$?



36. Determine the equation for the line that passes through $(0, -1)$ with a gradient of $-\frac{1}{4}$.

Tentukan persamaan garis lurus yang melalui koordinat $(0, -1)$ dengan kecerunan $-\frac{1}{4}$.

A $y = -\frac{1}{4}x$

C $y = \frac{1}{4}x + 1$

B $y = -\frac{1}{4}x + 1$

D $y = -\frac{1}{4}x - 1$

37. Find the y-intercept of the straight line $3x - 4y = 24$
Carikan pintasan-y bagi garis lurus $3x - 4y = 24$

A. $\frac{3}{4}$

C. -6

B. 8

D. $-\frac{4}{3}$

38. A container holds 28 yellow marbles and a number of green marbles. A marble is picked at random from the container. The probability of picking a yellow marble is $\frac{7}{8}$.
Sebuah bekas mengandungi 28 biji guli kuning dan beberapa biji guli hijau. Sebiji guli dipilih secara rawak daripada bekas itu. Kebarangkalian mendapat guli kuning ialah $\frac{7}{8}$.

How many green marbles are there in the container?
Berapakah bilangan guli hijau dalam bekas itu?

A 4
 B 8

C. 21
 D. 24

- 39 It is given that set R is $\{1, 2, 3, 5, 6, 7, 8, 9, 13, 14, 15\}$
 A number is chosen at random from the elements of set R.
 Find the probability that the number chosen is a prime number.

*Diberi bahawa set R ialah $\{1, 2, 3, 5, 6, 7, 8, 9, 13, 14, 15\}$
 Satu nombor dipilih secara rawak daripada unsur-unsur set R.
 Carikan kebarangkalian bahawa nombor yang dipilih itu ialah nombor perdana.*

A $\frac{4}{11}$
 B $\frac{5}{11}$

C $\frac{6}{11}$
 D $\frac{7}{11}$

40. In a training session, Ann has many trials to score a goal. The probability that Ann scores a goal in a trial is $\frac{9}{20}$. In 60 trials chosen randomly, how many times does Ann fail to score a goal ?

Dalam satu sesi latihan, Ann membuat beberapa percubaan menjaringkan gol. Kebarangkalian Ann menjaringkan gol ialah $\frac{9}{20}$. Dalam 60 percubaan yang dipilih secara rawak, berapa kalikah Ann gagal menjaringkan gol ?

A. 11
 B. 27

C. 33
 D. 49

**PEJABAT PELAJARAN DAERAH SEGAMAT
PEPERIKSAAN AKHIR TAHUN SETARA 2009**

**SKEMA PEMARKAHAN
MATEMATIK TINGKATAN 4**

KERTAS 1

1	C	11	B	21	D	31	D
2	B	12	A	22	B	32	C
3	C	13	D	23	D	33	B
4	B	14	B	24	C	34	D
5	B	15	D	25	B	35	A
6	B	16	D	26	A	36	D
7	C	17	A	27	D	37	C
8	B	18	D	28	D	38	A
9	C	19	B	29	C	39	B
10	A	20	A	30	C	40	C