MAKTAB RENDAH SAINS MARA

PEPERIKSAAN PERCUBAAN SIJIL PELAJARAN MALAYSIA 2005

MATEMATIK

Kertas 1

Satu jam lima belas minit

1 4 4 9 1

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

1. *Kertas soalan ini adalah dalam dwibahasa*

2. *Soalan di halaman kiri adalah dalam bahasa Melayu. Soalan di halaman kanan adalah yang sepadan dalam bahasa Inggeris*

3. *Calon dikehendaki membaca maklumat di halaman 2 atau halaman 3.*

Kertas soalan ini mengandungi 39 halaman bercetak dan 1 halaman tidak bercetak

INFORMATION FOR CANDIDATES

1. *This question paper consists of* 40 *questions*.

2. *Answer* **all** *questions*.

3. *Answer each question by blackening the correct space on the answer sheet*.

4. *Blacken only* **one** *space for each question*.

5. *If you wish to change your answer, erase the blackened mark that you have made. Then blacken the space for the new answer*.

6. *The diagrams in the questions provided are not drawn to scale unless stated*.

7. *A list of formulae is provided on pages* 4 *to* 7.

8. *A booklet of four-figure mathematical tables is provided*.

9. *You may use a non-programmable scientific calculator*.

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

RELATIONS

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 $A^{-1} = \frac{1}{ad-bc}\begin{pmatrix} d & -b \\ -c & a \end{pmatrix}$

5 $P(A) = \frac{n(A)}{n(S)}$

6 $P(A') = 1 - P(A)$

7 Distance $= \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$

8 Midpoint

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

9 Average speed $= \frac{\text{distance travelled}}{\text{time taken}}$

10 Mean $= \frac{\text{sum of data}}{\text{number of data}}$

11 Mean $= \frac{\text{Sum of (class mark} \times \text{frequency)}}{\text{sum of frequencies}}$

12 Pythagoras Theorem

$c^2 = a^2 + b^2$

13 $m = \frac{y_2 - y_1}{x_2 - x_1}$

14 $m = -\frac{y - \text{intercept}}{x - \text{intercept}}$

SHAPE AND SPACE

1 Area of trapezium $= \frac{1}{2} \times$ sum of parallel sides $\times$ height

2 Circumference of circle $= \pi d = 2\pi r$

3 Area of circle $= \pi r^2$

4 Curved surface area of cylinder $= 2\pi rh$

5 Surface area of sphere $= 4\pi r^2$

6 Volume of right prism = cross sectional area $\times$ length

7 Volume of cylinder $= \pi r^2 h$

8 Volume of cone $= \frac{1}{3}\pi r^2 h$

9 Volume of sphere $= \frac{4}{3}\pi r^3$

10 Volume of right pyramid $= \frac{1}{3} \times$ base area $\times$ height

11 Sum of interior angles of a polygon $= (n-2) \times 180°$

12 $$\frac{\text{arc length}}{\text{circumference of circle}} = \frac{\text{angle subtended at centre}}{360^o}$$

13 $$\frac{\text{area of sector}}{\text{area of circle}} = \frac{\text{angle subtended at centre}}{360^o}$$

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

15 Area of image $= k^2 \times$ area of object

Answer **all** *questions.*

1 Round off 0.0062057 correct to three significant figures.

A 0.006
B 0.00620
C 0.00621
D 0.01

2 $3.64 \times 10^{-7} - \dfrac{4.5 \times 10^{-8}}{5 + 2.1 \times 10^{-2}} =$

A 6.35×10^{-8}
B 3.55×10^{-7}
C 3.64×10^{-7}
D 2.10×10^{-2}

3 In the year 2002, 205 122 ships stopped at Lumut Port with cargoes weighing up to a total of 905 million tonnes. Calculate the mean mass of cargoes, in tonnes, shipped in.

A 4.412×10^{6}
B 4.412×10^{3}
C 4.412×10^{-3}
D 4.412×10^{-9}

4 Which of the following is equivalent to 62_8?

A 51_{10}
B 220_5
C 110010_2
D 111110_2

5 $110101_2 - 1110_2 =$

A 100001_2
B 111010_2
C 111011_2
D 100111_2

6 In Diagram 1, *ABC* is an equilateral triangle.

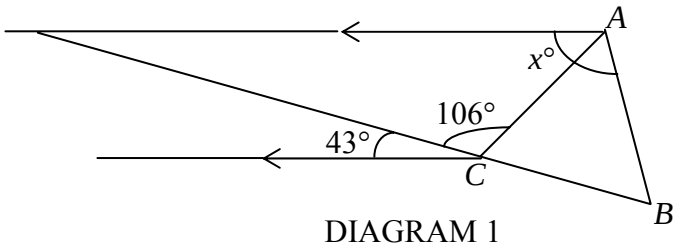


DIAGRAM 1

The value of *x* is

A 31^o
B 77^o
C 91^o
D 134^o

7 In Diagram 2, *PQRXST* and *RUVWX* are regular polygons. *PTY* and *VWY* are straight lines.

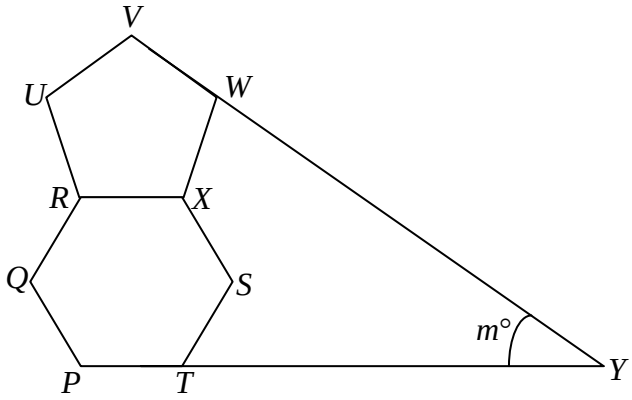


DIAGRAM 2

Find the value of *m*

A 24^o
B 36^o
C 48^o
D 72^o

8 In Diagram 3, *QSR* is a circle with centre *O*. *PQ* and *PR* are tangents to the circle at *Q* and *R*.

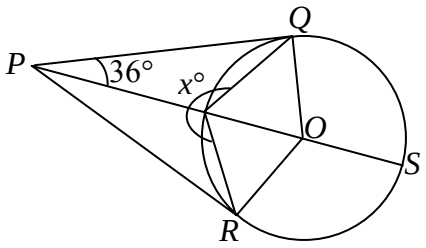


DIAGRAM 3

POS is a straight line. Given that $\angle OPQ = 36^o$, the value of x is

A 216^o
B 234^o
C 244^o
D 252^o

9 In Diagram 4, *P* and *Q* are two points on a horizontal ground.

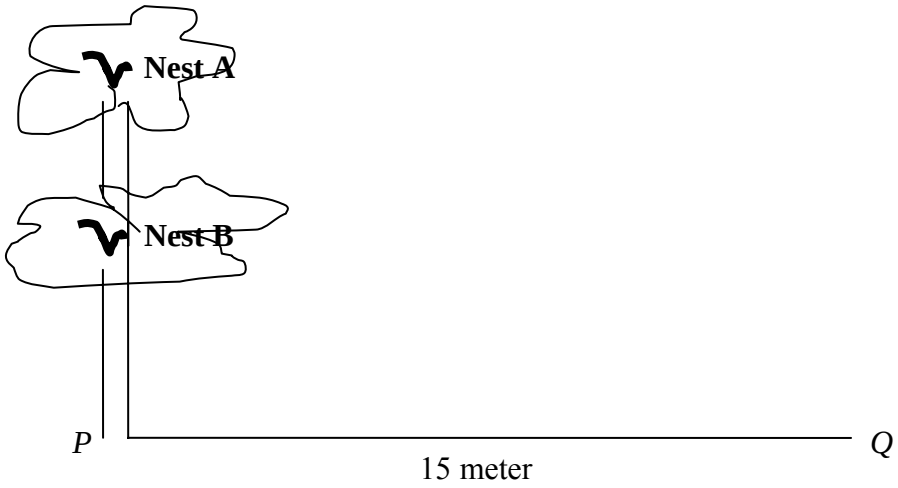


DIAGRAM 4

A tree is at a point *P*. The angles of depression of point *Q* from the nest A and the nest B are 21^o and 14^o respectively.

Calculate the distance, in metres, between the two nests.

A 1.406
B 1.747
C 1.842
D 2.018

10 In Diagram 5, TRW and PQR are straight lines.

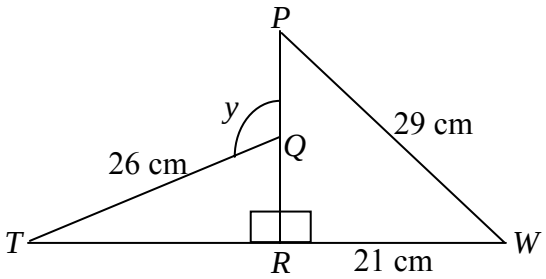


DIAGRAM 5

Q is the mid point of PR . Find the value of tan y.

A $-\frac{12}{5}$

B $-\frac{12}{13}$

C $-\frac{5}{12}$

D $-\frac{5}{13}$

11 Diagram 6 shows graphs of $y = \cos x$ and $y = \sin x$.

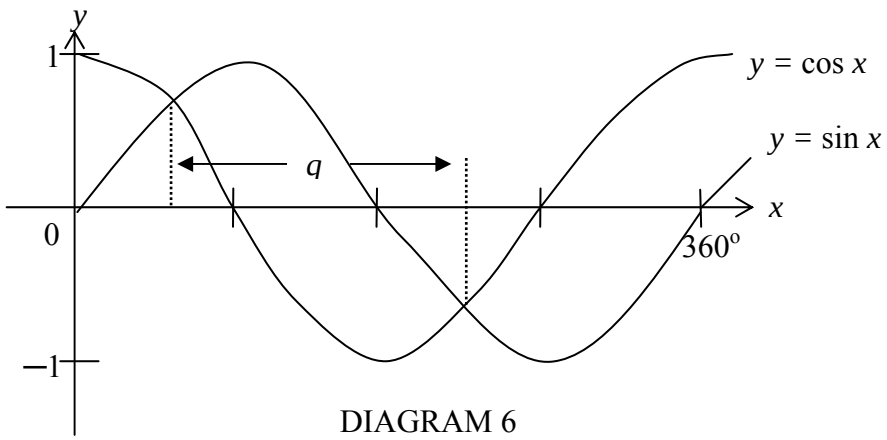


DIAGRAM 6

Find the value of q .

A 90^o

B 135^o

C 180^o

D 225^o

12 Diagram 7 shows a cube with a horizontal base *ABCD*.

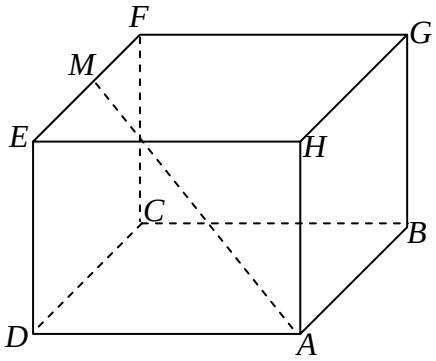


DIAGRAM 7

M is the midpoint of *EF*.

Calculate the angle between the line *MA* and the plane *CDEF*.

A 19.47^{o}
B 41.81^{o}
C 48.19^{o}
D 70.53^{o}

13 In Diagram 8, points *M*, *P*, *Q* and *R* are on a horizontal plane.

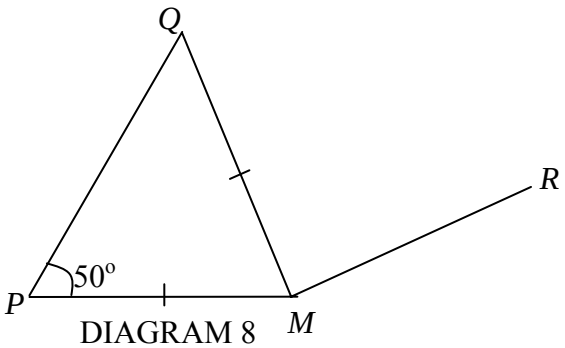


DIAGRAM 8

M is due south of *R*. Given that *MP* = *MQ* and the bearing of *P* from *M* is 250^{o}. Find the bearing of *Q* from *M*.

A 330^{o}
B 300^{o}
C 250^{o}
D 150^{o}

14 $P(50^\circ\ N\ ,\ 125^\circ\ W\ )$, Q and R are three points on the earth's surface with $PQ = QR = RP$ measured along the great circle. Q is due south of P. The position of R is

A $(10^\circ\ N\ ,\ 55^\circ\ E\ )$

B $(\ 20^\circ\ N,\ 55^\circ\ E\ )$

C $(\ 10^\circ\ N\ ,\ 125^\circ E\ )$

D $(\ 20^\circ\ N\ ,\ 125^\circ\ E)$

15 Transformation **T** represents translation $\begin{pmatrix} h \\ k \end{pmatrix}$. Point $(\ 3\ ,\ -1\ )$ is the image of point $(1\ ,\ 6\ )$ under transformation **T**. **T** is

A $\begin{pmatrix} -7 \\ 2 \end{pmatrix}$

B $\begin{pmatrix} 7 \\ -2 \end{pmatrix}$

C $\begin{pmatrix} -2 \\ 7 \end{pmatrix}$

D $\begin{pmatrix} 2 \\ -7 \end{pmatrix}$

16 Diagram 9 shows ΔPQR is the image of ΔXYZ under a rotation of 90^o clockwise.

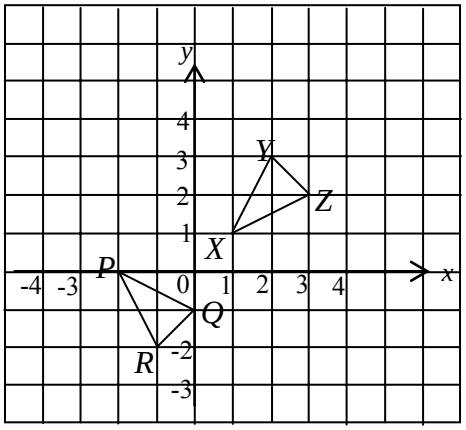


DIAGRAM 9

State the coordinates of the centre of rotation.

A (3 , –2)
B (0 , 3)
C (–1 , 2)
D (–2 , 1)

17 Diagram 10 shows the triangle *KLM*. Point *L* is the image of point *K* under a certain reflection.

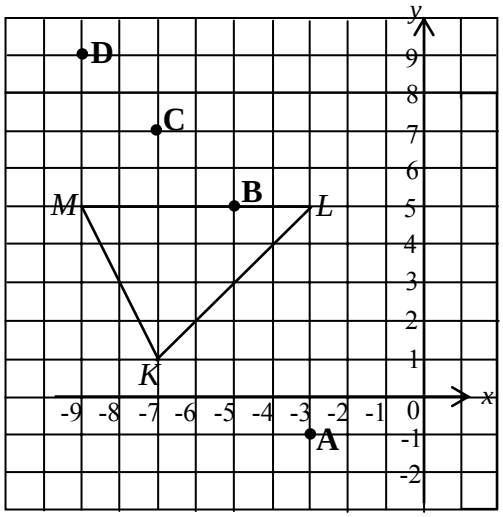


DIAGRAM 10

Which of the points **A, B, C** and **D** is the image of *M* under the same reflection?

18 $2ae - bd + 2ed - ba =$

A $(2e + d)(a - b)$

B $(2e + b)(a - d)$

C $(2a - b)(e + d)$

D $(2e - b)(a + d)$

19 Given $8p - 3 = 5\ (p\ -\ \frac{1}{5})$, then $p =$

A $\frac{14}{15}$

B $\frac{2}{3}$

C $\frac{2}{7}$

D $-\frac{2}{3}$

20 $\frac{3}{x^2 - 1} - \frac{3}{x - 1} =$

A $\frac{-3x}{x^2 - 1}$

B $\frac{6 - 3x^2}{x^2 - 1}$

C $\frac{4 - 3x}{x^2 - 1}$

D $\frac{6 - 3x}{x^2 - 1}$

21 Given $5y - 4 = 14 - (y + 3)$, then $y =$

A $\frac{2}{5}$

B $\frac{5}{2}$

C $\frac{7}{2}$

D $\frac{15}{4}$

22 Given $\frac{3m-4}{3} = \frac{m+2}{n}$, then $m =$

A $\frac{6+4n}{3(n-1)}$

B $\frac{6-4n}{3(n-1)}$

C $\frac{2+4n}{3(n-1)}$

D $\frac{6}{3(n-1)}$

23 Simplify $(4m^{-2}n)^2 \div (m^3n^{-2})^3$

A $16m^{-13}n^8$

B $16m^{-13}n^7$

C $4m^{-13}n^8$

D $4m^5n^{-4}$

24 Simplify $\frac{3p^{-3}(2p^{-2}q^4)^3}{pq}$

A $6p^{-10}q^{11}$

B $24p^{-3}q^6$

C $24p^{-8}q^{11}$

D $24p^{-10}q^{11}$

25 Given that m is an integer. Find all the values of m that satisfy both of the inequalities $5-2m > -4$ and $\frac{m+3}{2} > 1$

A $-3, -2, -1, 0, 1, 2, 3, 4$

B $-1, 0, 1, 2, 3, 4$

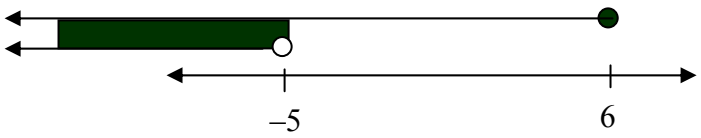
C $0, 1, 2, 3, 4$

D $1, 2, 3, 4$

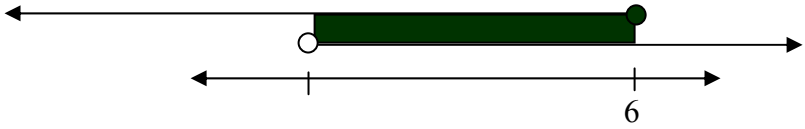
26 Solve the simultaneous linear inequalities $\frac{3x+2}{5} \leq 4$ and $3 - x < 8$.

The number line that represents the solution is

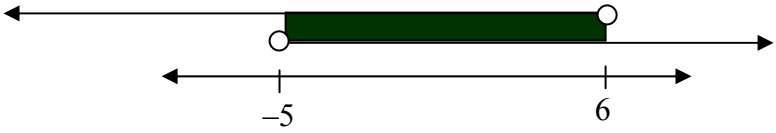
A



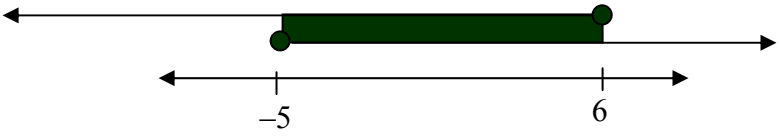
B



C



D



27 Given that the matrix equation $\begin{pmatrix} p & 1 \end{pmatrix} + \frac{1}{2}\begin{pmatrix} -4 & 10 \end{pmatrix} = \begin{pmatrix} 4 & p \end{pmatrix}$.

Find the value of p

A 4
B 6
C 11
D 12

28 Given $k\begin{pmatrix} 4 & 1 \\ -3 & 0 \end{pmatrix} - \begin{pmatrix} 4 & h \\ 3 & 1 \end{pmatrix} = \begin{pmatrix} 4 & 7 \\ -9 & -1 \end{pmatrix}$, find the value of h.

A 5
B 2
C –3
D –5

29 $\begin{pmatrix} 3 \\ -1 \end{pmatrix} \begin{pmatrix} 2 & 1 \end{pmatrix} =$

A $\begin{pmatrix} 6 & 3 \\ -2 & -1 \end{pmatrix}$

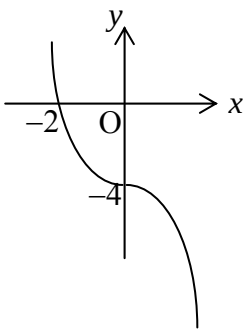
B $\begin{pmatrix} 6 & -2 \\ 3 & -1 \end{pmatrix}$

C $\begin{pmatrix} 6 \\ -1 \end{pmatrix}$

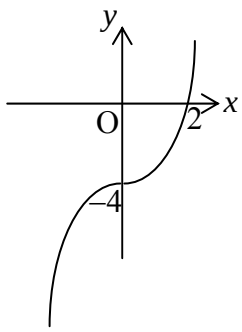
D $\begin{pmatrix} 9 & -3 \end{pmatrix}$

30 Which of the following graph represents $y = \frac{1}{2}x^3 - 4$?

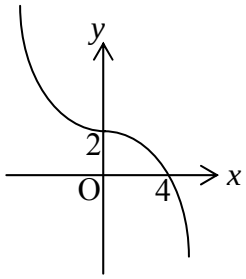
A



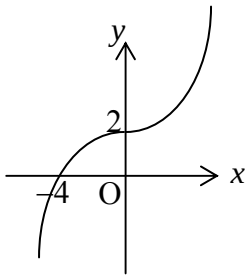
B



C



D



31 In Diagram 11, *PQ* and *MN* are parallel lines.

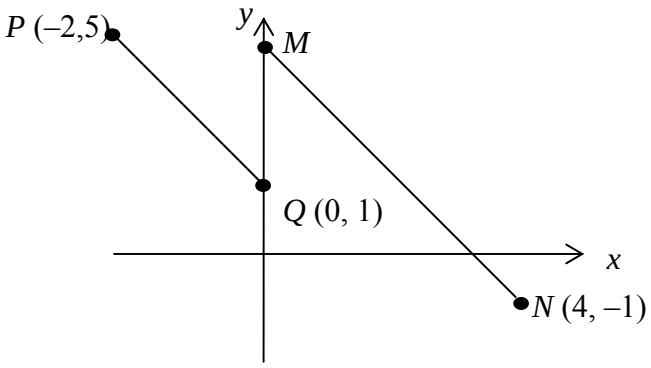


DIAGRAM 11

Find the equation of the straight line *MN*.

A $y = -2x + 7$
B $y = -2x + 9$
C $y = -\frac{1}{2}x + 1$
D $y = -\frac{1}{2}x + 3$

32 In Diagram 12, ξ is the universal set

Error!

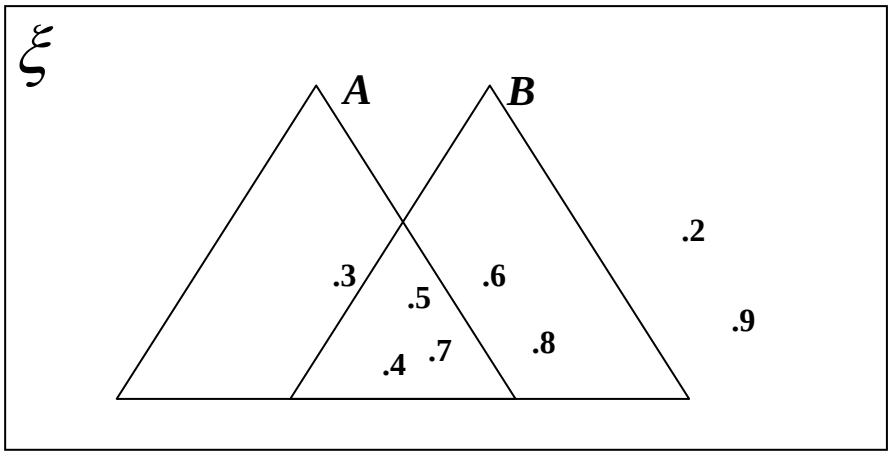


DIAGRAM 12

Set of $B \cap A'$ is

A { 4, 5, 6, 7, 8 }
B { 2, 6, 8, 9 }
C { 4, 5, 7 }
D { 6, 8 }

33 Diberi bahawa set semesta ξ = { x : $20 \le x < 31$, x ialah integer },

set $M = \{ x : x \text{ is a multiple of } 5 \}$ and
set $N = \{ x : x \text{ is a perfect square} \}$.

Find $n(M' \cup N)$.

A 8
B 9
C 10
D 11

34 Given that $\xi = P \cup Q \cup R$ and $\xi = \{ 3, 5, 7, 9, 10, 11, 12, 13 \}$,
$P = \{$ odd numbers $\}$, $Q = \{$ prime numbers $\}$ and $R = \{$ two digit numbers $\}$.
Set $(R \cup Q) \cap P$ is

A $\{ 9 \}$
B $\{ 3, 5, 7, 9 \}$
C $\{ 3, 5, 7, 11, 13 \}$
D $\{ 3, 5, 7, 9,11, 13 \}$

35 U is inversely proportional to the cube root of W and $U = 8$
when $W = \frac{1}{64}$.

Express U in terms of W.

A $U = \frac{2}{\sqrt[3]{W}}$

B $U = \frac{32}{\sqrt[3]{W}}$

C $U = \frac{1}{\sqrt[3]{W}}$

D $U = 2\sqrt[3]{W}$

36 Jadual 1 menunjukkan hubungan antara tiga pembolehubah *p, q* dan *r*.

p	16	72
q	8	–24
r	–6	v

TABLE 1

Given that $p \propto \frac{q^2}{r}$, calculate the value of v.

A 96
B 12
C –12
D –96

37 Table 2 shows the distribution of storm victims from various villages who were given temporary settlement.

Location	Kg. Seberang Sungai	Kg. Muara	Kg. Kota	Kg. Paya
Number of victims	60	45	75	20

TABLE 2

One victim is drawn at random. Find the probability that the chosen victim is from Kg. Seberang Sungai or Kg. Kota .

A $\frac{9}{80}$
B $\frac{3}{100}$
C $\frac{3}{8}$
D $\frac{27}{40}$

38 Satu kajian menunjukkan terdapat kaitan antara tahap penguasaan Bahasa Inggeris dengan pencapaian dalam Matematik. Kebarangkalian seorang pelajar tertentu akan

is $\frac{3}{5}$. If he passes English, the probability he passes Mathematics is $\frac{4}{7}$. However, if he fails English, the probability he passes Mathematics is $\frac{1}{4}$.

Find the probability a particular student passes Mathematics.

A $\frac{3}{35}$

B $\frac{1}{7}$

C $\frac{31}{70}$

D $\frac{23}{28}$

39 The scores for 8 students in a test are as follows:

32, 38, 49, 46, 32, 11, 44, x

If the median score is 41, then the possible value of x is

A 36

B 39

C 40

D 44

40 Diagram 13 shows a histogram representing the scores of 100 students in a test.

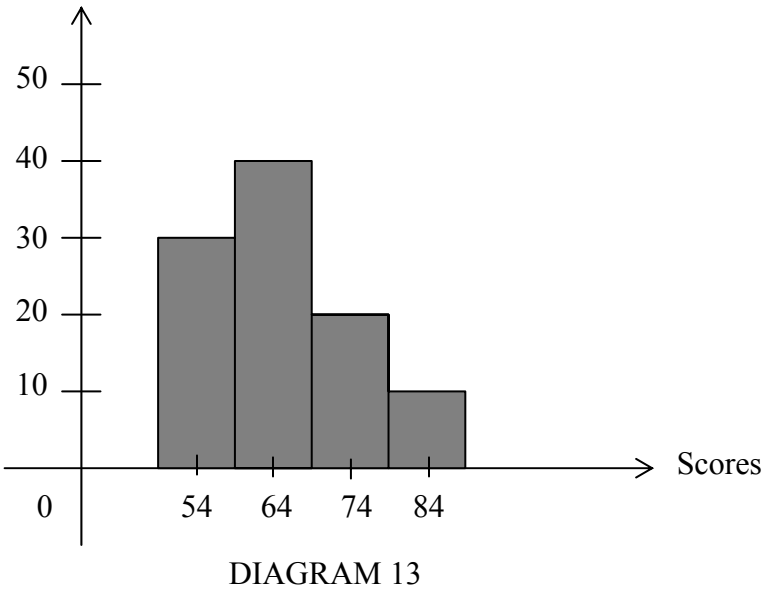


DIAGRAM 13

Find the mean score .

A 40
B 64
C 65
D 69

END OF QUESTION PAPER

MAKTAB RENDAH SAINS MARA

PEPERIKSAAN PERCUBAAN SIJIL PELAJARAN MALAYSIA 2005

MATEMATIK

Kertas 1

Satu jam lima belas minit

1 4 4 9 1

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

1. *Kertas soalan ini adalah dalam dwibahasa*

2. *Soalan di halaman kiri adalah dalam bahasa Melayu. Soalan di halaman kanan adalah yang sepadan dalam bahasa Inggeris*

3. *Calon dikehendaki membaca maklumat di halaman 2 atau halaman 3.*

Kertas soalan ini mengandungi 39 halaman bercetak dan 1 halaman tidak bercetak

MAKLUMAT UNTUK CALON

1. *Kertas soalan ini mengandungi* 40 *soalan.*

2. *Jawab* **semua** *soalan.*

3. *Jawab dengan menghitamkan ruangan yang betul pada kertas jawapan.*

4. *Bagi setiap soalan hitamkan* **satu** *ruangan sahaja.*

5. *Sekiranya anda hendak menukarkan jawapan, padamkan tanda yang telah dibuat. Kemudian hitamkan jawapan yang baru.*

6. *Rajah yang mengiringi soalan tidak dilukiskan mengikut skala kecuali dinyatakan.*

7. *Satu senarai rumus disediakan di halaman* 4 *hingga* 7.

8. *Sebuah buku sifir matematik empat angka disediakan.*

9. *Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogram.*

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

PERKAITAN

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 $A^{-1} = \frac{1}{ad-bc}\begin{pmatrix} d & -b \\ -c & a \end{pmatrix}$

5 $P(A) = \frac{n(A)}{n(S)}$

6 $P(A') = 1 - P(A)$

7 Jarak $= \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$

8 Titik tengah

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

9 Purata laju $= \frac{\text{jarak yang dilalui}}{\text{masa yang diambil}}$

10 Min $= \frac{\text{hasil tambah nilai data}}{\text{bilangan data}}$

11 Min $= \frac{\text{hasil tambah (nilai titik tengah kelas x kekerapan)}}{\text{hasil tambah kekerapan}}$

12 Teorem Pithagoras

$c^2 = a^2 + b^2$

13 $m = \frac{y_2 - y_1}{x_2 - x_1}$

14 $m = -\frac{\text{pintasan} - y}{\text{pintasan} - x}$

BENTUK DAN RUANG

1 Luas trapezium = $\frac{1}{2}$ × hasil tambah dua sisi selari × tinggi

2 Lilitan bulatan = $\pi d = 2\pi j$

3 Luas bulatan = πj^2

4 Luas permukaan melengkung silinder = $2\pi jt$

5 Luas permukaan sfera = $4\pi j^2$

6 Isipadu prisma tegak = luas keratan rentas × panjang

7 Isipadu silinder = $\pi j^2 t$

8 Isipadu kon = $\frac{1}{3}\pi j^2 t$

9 Isipadu sfera = $\frac{4}{3}\pi j^3$

10 Isipadu piramid tegak = $\frac{1}{3}$ × luas tapak × tinggi

11 Hasil tambah sudut pedalaman poligon = $(n - 2) \times 180°$

12 $\frac{\text{panjang lengkok}}{\text{lilitan bulatan}} = \frac{\text{sudut pusat}}{360^o}$

13 $\frac{\text{luas sektor}}{\text{luas bulatan}} = \frac{\text{sudut pusat}}{360^o}$

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

15 Luas imej = k^2 × luas objek

Jawab **semua** *soalan.*

1 Bundarkan 0.0062057 betul kepada tiga angka bererti.

A 0.006
B 0.00620
C 0.00621
D 0.01

2 $3.64 \times 10^{-7} - \dfrac{4.5 \times 10^{-8}}{5 + 2.1 \times 10^{-2}} =$

A 6.35×10^{-8}
B 3.55×10^{-7}
C 3.64×10^{-7}
D 2.10×10^{-2}

3 Pada tahun 2002, sebanyak 205 122 kapal berhenti di Pelabuhan Lumut dengan membawa kargo berjumlah 905 juta ton. Hitungkan min jisim kargo, dalam ton, yang dibawa oleh kapal-kapal itu.

A 4.412×10^{6}
B 4.412×10^{3}
C 4.412×10^{-3}
D 4.412×10^{-9}

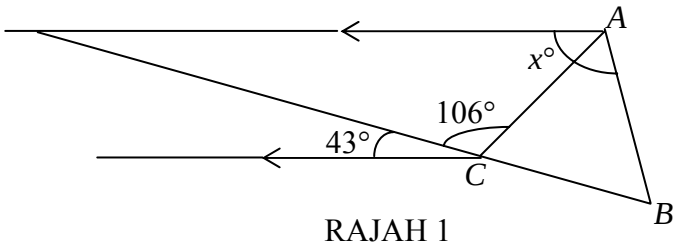
4 Antara berikut yang manakah bersamaan dengan 62_8 ?

A 51_{10}
B 220_5
C 110010_2
D 111110_2

5 $110101_2 - 1110_2 =$

A 100001_2
B 111010_2
C 111011_2
D 100111_2

6 Dalam Rajah 1, *ABC* ialah sebuah segitiga sama sisi.

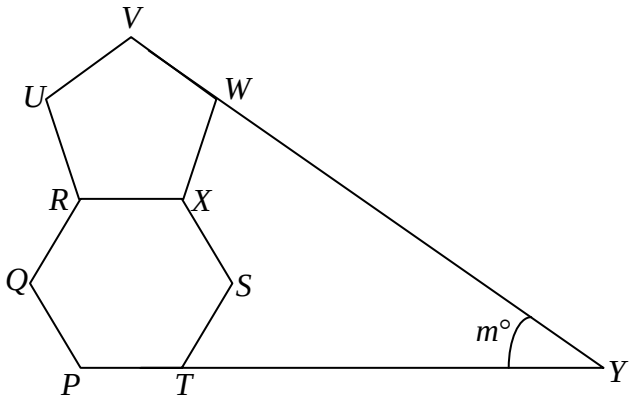


RAJAH 1

Nilai *x* ialah

A 31^o
B 77^o
C 91^o
D 134^o

7 Dalam Rajah 2, *PQRXST* dan *RUVWX* adalah poligon sekata. *PTY* dan *VWY* adalah garis lurus.

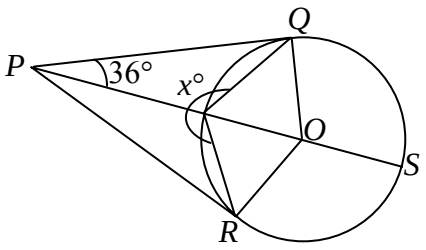


RAJAH 2

Cari nilai *m*

A 24^o
B 36^o
C 48^o
D 72^o

8 Dalam Rajah 3, *QSR* ialah sebuah bulatan berpusat *O*. *PQ* dan *PR* ialah tangen kepada bulatan *QSR* di *Q* dan *R*.

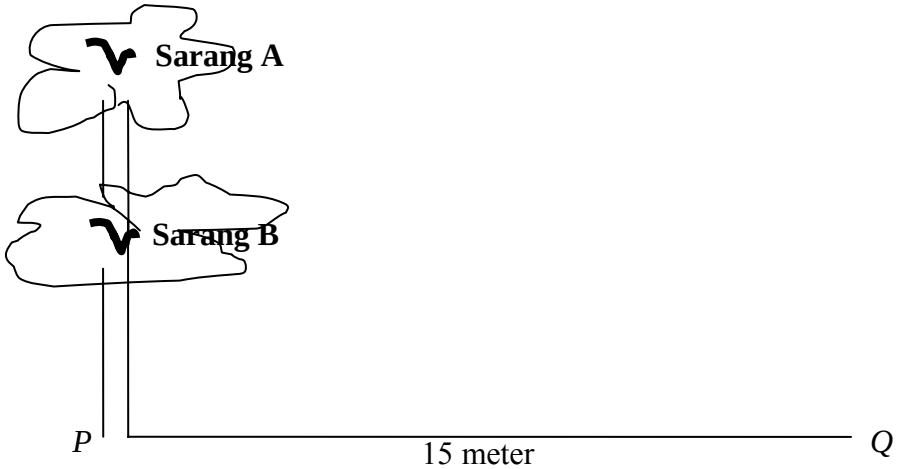


RAJAH 3

POS ialah garis lurus. Diberi bahawa $\angle OPQ = 36^o$, maka nilai *x* ialah

A 216^o
B 234^o
C 244^o
D 252^o

9 Dalam Rajah 4 , *P* dan *Q* ialah dua titik di atas tanah rata.



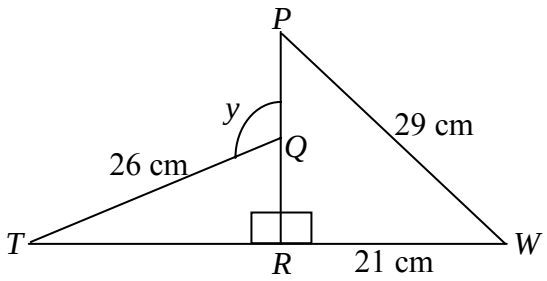
RAJAH 4

Sebatang pokok tumbuh tegak di atas titik *P*. Sudut tunduk titik *Q* dari sarang *A* dan sarang *B* masing-masing ialah 21^o dan 14^o.

Hitungkan jarak, dalam meter, di antara kedua-dua sarang tersebut.

A 1.406
B 1.747
C 1.842
D 2.018

10 Rajah 5 menunjukkan TRW dan PQR ialah garis lurus.



RAJAH 5

Q ialah titik tengah PR . Carikan nilai tan y.

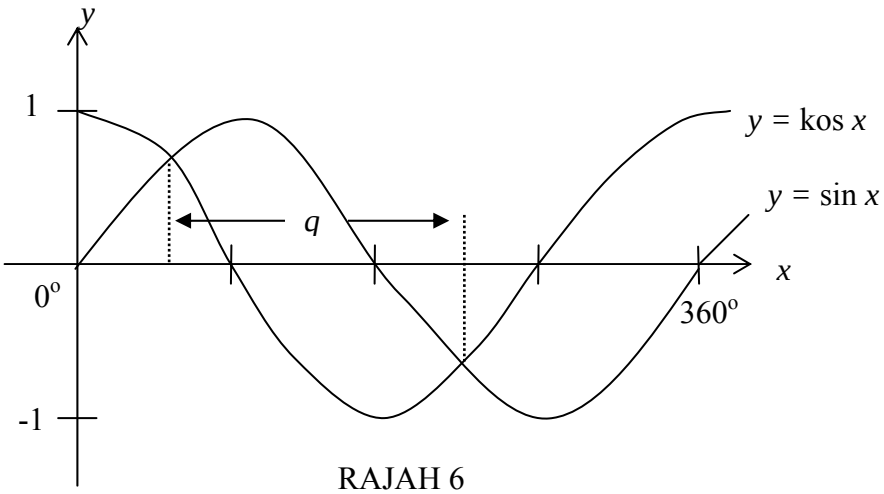
A $-\frac{12}{5}$

B $-\frac{12}{13}$

C $-\frac{5}{12}$

D $-\frac{5}{13}$

11 Rajah 6 menunjukkan graf $y = \text{kos } x$ dan graf $y = \sin x$.



RAJAH 6

Carikan nilai q .

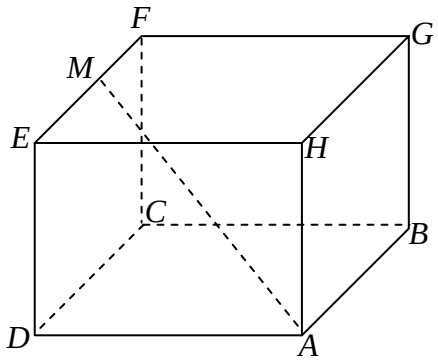
A 90^o

B 135^o

C 180^o

D 225^o

12 Rajah 7 menunjukkan sebuah kubus dengan tapak mengufuk *ABCD*.



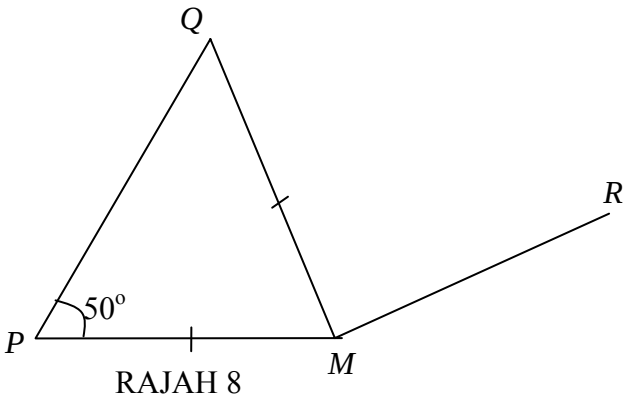
RAJAH 7

M adalah titik tengah *EF*.

Hitungkan sudut di antara garis *MA* dengan satah *CDEF*.

A 19.47^{o}
B 41.81^{o}
C 48.19^{o}
D 70.53^{o}

13 Dalam Rajah 8, titik-titik *M, P, Q* dan *R* terletak pada satu satah mengufuk.



RAJAH 8

M terletak ke selatan *R*. Diberi bahawa *MP* = *MQ* dan bearing *P* dari *M* adalah 250^{o}. Carikan bearing *Q* dari *M*.

A 330^{o}
B 300^{o}
C 250^{o}
D 150^{o}

14 Diberi $P(50^o\ U\ ,\ 125^o\ B)$, Q dan R adalah dua titik di atas permukaan bumi dengan keadaan $PQ = QR = RP$ diukur sepanjang bulatan agung. Q terletak di selatan P. Kedudukan bagi R ialah

A $(10^o\ U\ ,\ 55^o\ T\ )$

B $(\ 20^o\ U,\ 55^o\ T\ )$

C $(\ 10^o\ U\ ,\ 125^o\ T)$

D $(\ 20^o\ U\ ,\ 125^o\ T)$

15 Penjelmaan T mewakili translasi $\begin{pmatrix} h \\ k \end{pmatrix}$. Titik $(3\ ,-1)$ ialah imej bagi $(1\ ,\ 6)$ di bawah penjelmaan T. T ialah

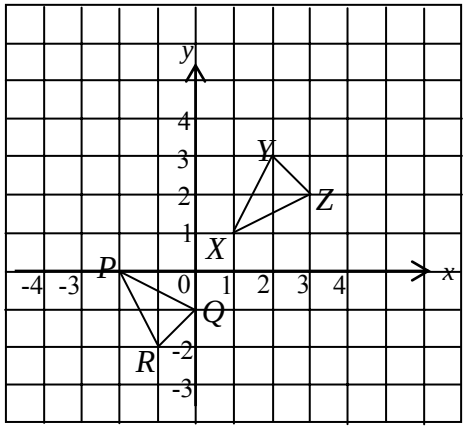
A $\begin{pmatrix} -7 \\ 2 \end{pmatrix}$

B $\begin{pmatrix} 7 \\ -2 \end{pmatrix}$

C $\begin{pmatrix} -2 \\ 7 \end{pmatrix}$

D $\begin{pmatrix} 2 \\ -7 \end{pmatrix}$

16 Rajah 9 menunjukkan ΔPQR ialah imej bagi ΔXYZ di bawah putaran 90^o ikut arah jam.

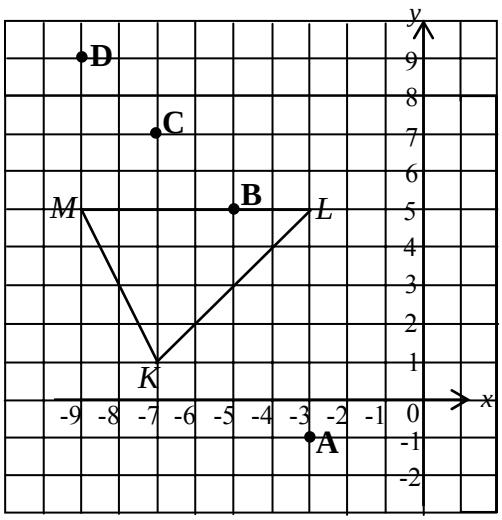


RAJAH 9

Nyatakan koordinat pusat putaran

A (3 , –2)
B (0 , 3)
C (–1 , 2)
D (–2 , 1)

17 Rajah 10 menunjukkan segitiga *KLM*. Titik *L* ialah imej bagi titik *K* di bawah satu pantulan tertentu.



RAJAH 10

Antara titik-titik **A**, **B**, **C** dan **D** yang manakah imej bagi titik *M* di bawah pantulan yang sama?

18 $2ae - bd + 2ed - ba =$

A $(2e + d)(a - b)$

B $(2e + b)(a - d)$

C $(2a - b)(e + d)$

D $(2e - b)(a + d)$

19 Diberi $8p - 3 = 5\ (p - \frac{1}{5})$, maka $p =$

A $\frac{14}{15}$

B $\frac{2}{3}$

C $\frac{2}{7}$

D $-\frac{2}{3}$

20 $\frac{3}{x^2 - 1} - \frac{3}{x - 1} =$

A $\frac{-3x}{x^2 - 1}$

B $\frac{6 - 3x^2}{x^2 - 1}$

C $\frac{4 - 3x}{x^2 - 1}$

D $\frac{6 - 3x}{x^2 - 1}$

21 Diberi $5y - 4 = 14 - (y + 3)$, maka $y =$

A $\frac{2}{5}$

B $\frac{5}{2}$

C $\frac{7}{2}$

D $\frac{15}{4}$

22 Diberi $\frac{3m-4}{3} = \frac{m+2}{n}$, maka $m =$

A $\frac{6+4n}{3(n-1)}$

B $\frac{6-4n}{3(n-1)}$

C $\frac{2+4n}{3(n-1)}$

D $\frac{6}{3(n-1)}$

23 Ringkaskan $(4m^{-2}n)^2 \div (m^3n^{-2})^3$

A $16m^{-13}n^8$

B $16m^{-13}n^7$

C $4m^{-13}n^8$

D $4m^5n^{-4}$

24 Permudahkan $\frac{3p^{-3}(2p^{-2}q^4)^3}{pq}$

A $6p^{-10}q^{11}$

B $24p^{-3}q^6$

C $24p^{-8}q^{11}$

D $24p^{-10}q^{11}$

25 Diberi bahawa m ialah integer, carikan semua nilai-nilai m yang memuaskan kedua-dua ketaksamaan $5 - 2m > -4$ dan $\frac{m+3}{2} > 1$

A $-3, -2, -1, 0, 1, 2, 3, 4$

B $-1, 0, 1, 2, 3, 4$

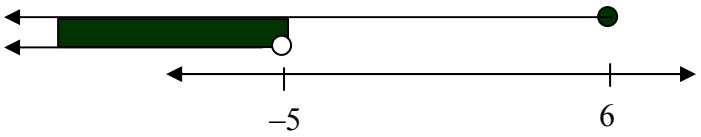
C $0, 1, 2, 3, 4$

D $1, 2, 3, 4$

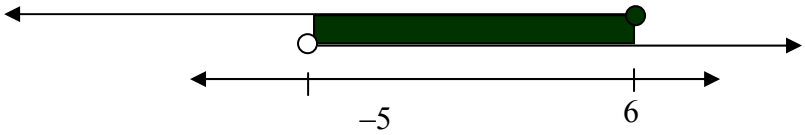
26 Selesaikan kedua-dua ketaksamaan $\frac{3x+2}{5} \leq 4$ dan $3-x<8$.

Penyelesaiannya dalam bentuk garis nombor ialah :

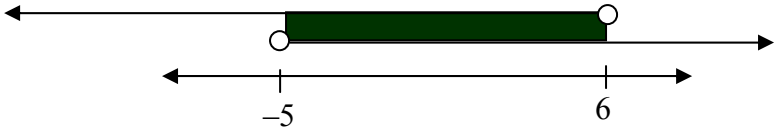
A



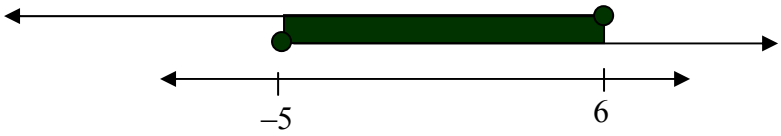
B



C



D



26 Diberi bahawa persamaan matriks $\begin{pmatrix} p & 1 \end{pmatrix} + \frac{1}{2}\begin{pmatrix} -4 & 10 \end{pmatrix} = \begin{pmatrix} 4 & p \end{pmatrix}$.

Carikan nilai p

A 4
B 6
C 11
D 12

28 Diberi $k\begin{pmatrix} 4 & 1 \\ -3 & 0 \end{pmatrix} - \begin{pmatrix} 4 & h \\ 3 & 1 \end{pmatrix} = \begin{pmatrix} 4 & 7 \\ -9 & -1 \end{pmatrix}$, carikan nilai h.

A 5
B 2
C –3
D –5

29 $\begin{pmatrix} 3 \\ -1 \end{pmatrix} \begin{pmatrix} 2 & 1 \end{pmatrix} =$

A $\begin{pmatrix} 6 & 3 \\ -2 & -1 \end{pmatrix}$

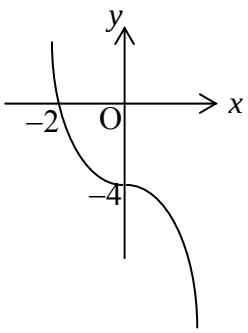
B $\begin{pmatrix} 6 & -2 \\ 3 & -1 \end{pmatrix}$

C $\begin{pmatrix} 6 \\ -1 \end{pmatrix}$

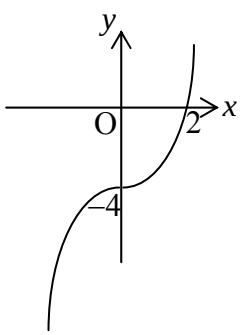
D $\begin{pmatrix} 9 & -3 \end{pmatrix}$

30 Antara graf berikut, yang manakah mewakili $y = \frac{1}{2}x^3 - 4$?

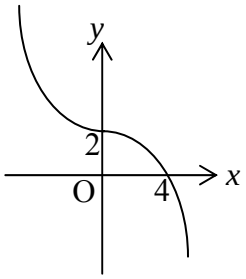
A



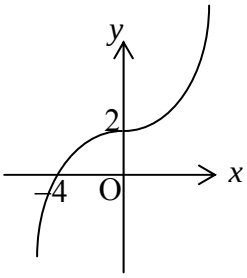
B



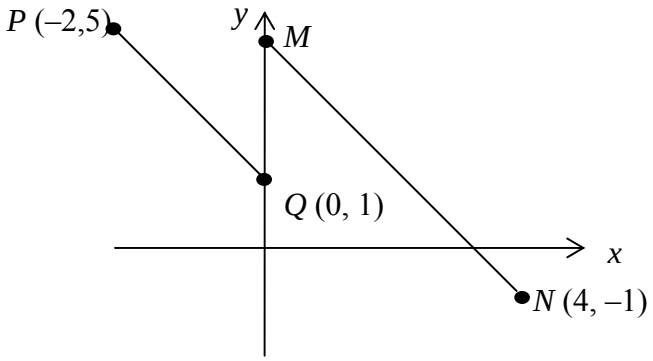
C



D



31 Dalam Rajah 11, garis PQ dan MN adalah selari.



RAJAH 11

Cari persamaan garis *MN*.

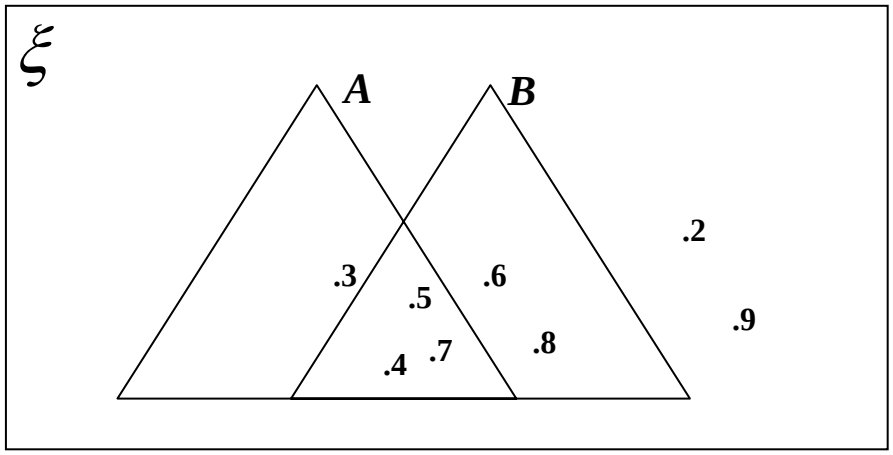
A $y = -2x + 7$

B $y = -2x + 9$

C $y = -\frac{1}{2}x + 1$

D $y = -\frac{1}{2}x + 3$

32 Dalam rajah 12 , ξ adalah set semesta.



RAJAH 12

Set $B \cap A'$ ialah

A { 4, 5, 6, 7, 8 }

B { 2, 6, 8, 9 }

C { 4, 5, 7 }

D { 6, 8 }

set $M = \{ x : x$ ialah nombor gandaan 5 $\}$dan
set $N = \{ x : x$ ialah nombor kuasa dua sempurna $\}$

Carikan $n(M' \cup N)$.

A 8
B 9
C 10
D 11

34 Diberi bahawa $\xi = P \cup Q \cup R$ dan $\xi = \{ 3, 5, 7, 9, 10, 11, 12, 13 \}$,
$P = \{$ nombor ganjil $\}$, $Q = \{$ nombor perdana $\}$ dan $R = \{$ nombor dua digit $\}$.
Set $(R \cup Q) \cap P$ ialah

A $\{ 9 \}$
B $\{ 3, 5, 7, 9 \}$
C $\{ 3, 5, 7,11,13 \}$
D $\{ 3, 5, 7, 9,11, 13 \}$

35 U berubah secara songsang dengan punca kuasa tiga W dan $U = 8$ apabila $W = \frac{1}{64}$.

Ungkapkan U dalam sebutan W.

A $U = \frac{2}{\sqrt[3]{W}}$

B $U = \frac{32}{\sqrt[3]{W}}$

C $U = \frac{1}{\sqrt[3]{W}}$

D $U = 2\sqrt[3]{W}$

33 Given that $\xi = \{ x : 20 \leq x < 31, x$ is an integer $\}$,

p	16	72
q	8	–24
r	–6	v

JADUAL 1

Diberi bahawa $p \propto \frac{q^2}{r}$, hitungkan nilai v.

A 96

B 12

C –12

D –96

37 Jadual 2 menunjukkan taburan sekumpulan mangsa ribut dari beberapa buah kampung yang telah diberi penempatan sementara.

Lokasi	Kg. Seberang Sungai	Kg. Muara	Kg. Kota	Kg. Paya
Bilangan Mangsa	60	45	75	20

JADUAL 2

Seorang mangsa dipilih secara rawak. Cari kebarangkalian bahawa mangsa yang dipilih ialah dari Kg. Seberang Sungai atau Kg. Kota.

A $\frac{9}{80}$

B $\frac{3}{100}$

C $\frac{3}{8}$

D $\frac{27}{40}$

36 Table 1 shows the relationship between three variables p, q and r.

lulus Bahasa Inggeris ialah $\frac{3}{5}$. Jika dia lulus Bahasa Inggeris, kebarangkalian dia lulus Matematik ialah $\frac{4}{7}$. Sebaliknya, jika dia gagal dalam Bahasa Inggeris, kebarangkalian dia lulus Matematik ialah $\frac{1}{4}$.

Cari kebarangkalian bahawa pelajar itu lulus dalam Matematik.

A $\frac{3}{35}$

B $\frac{1}{7}$

C $\frac{31}{70}$

D $\frac{23}{28}$

39 Skor bagi 8 orang pelajar dalam satu ujian adalah seperti berikut :

32 , 38 , 49 , 46 , 32 , 11 , 44, x

Jika median skor ialah 41, maka nilai x yang mungkin ialah

A 36

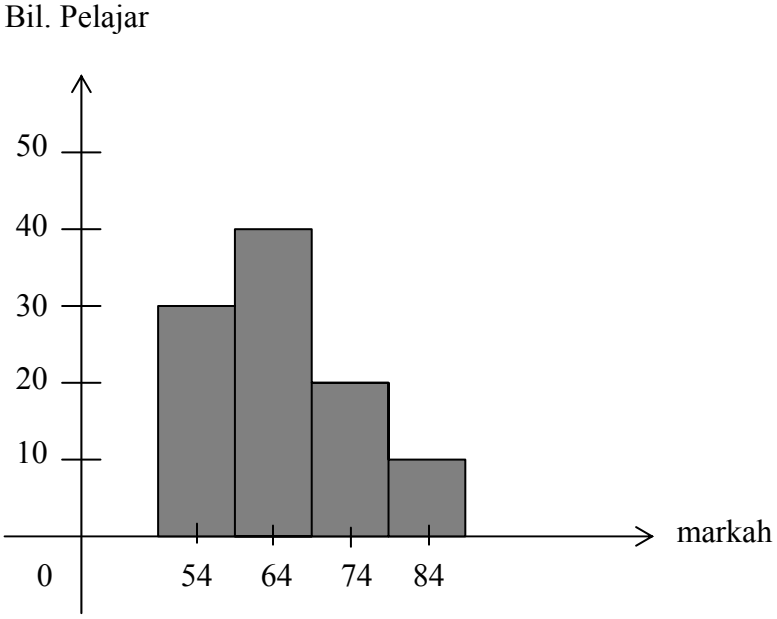
B 39

C 40

D 44

38 A survey shows there is a relationship between the proficiency in English and achievement in Mathematics. The probability of a particular student passes English

40 Rajah 13 menunjukkan sebuah histogram mewakili markah 100 orang pelajar dalam suatu ujian.



RAJAH 13

Carikan min markah.

A 40
B 64
C 65
D 69

KERTAS SOALAN TAMAT