MAKTAB RENDAH SAINS MARA

PEPERIKSAAN PERCUBAAN SIJIL PELAJARAN MALAYSIA 2006

1 4 4 9 1

MATEMATIK

Kertas 1

Satu jam lima belas minit

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 41 halaman bercetak dan 3 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 menukar jawapan, padamkan tanda yang telah dibuat. Kemudian hitamkan jawapan yang baru.*

6. *Rajah yang mengiringi soalan tidak dilukis 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 diprogramkan.*

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.*

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

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

12. Teorem Pithagoras, $c^2 = a^2 + b^2$

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

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

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

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 = $\frac{\text{Sum of (class mark} \times \text{frequency)}}{\text{sum of frequencie s}}$

12. Pythagoras Theorem, $c^2 = a^2 + b^2$

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

14. $m = -\frac{y - \text{int ercept}}{x - \text{int ercept}}$

BENTUK DAN RUANG

1. Luas trapezium = $\frac{1}{2} \times$ hasiltambah dua sisi selari $\times$ 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 $\times$ 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 = $\frac{1}{3} \times$ luas tapak $\times$ tinggi

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

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

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

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

15. Luas imej = $k^2 \times$ luas objek

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 = πr^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 = $(n - 2) \times 180^o$

12. $\frac{\text{arc length}}{\text{circumfere nce of circle}} = \frac{\text{angle subtended at centre}}{360^\circ}$

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

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

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

Jawab **semua** *soalan*

1 Bundarkan 89119 betul kepada dua angka bererti.

A 89
B 890
C 8900
D 89000

2 $\frac{(8.5\times10^{2})^{3}}{\sqrt{1.6\times10^{5}}}=$

A 1.535×10^{2}
B 1.535×10^{6}
C 2.125×10^{3}
D 2.125×10^{4}

3 Laju sebuah pesawat ialah 230 ms^{-1}. Hitungkan masa yang diambil, dalam saat, untuk pesawat tersebut bergerak sejauh 2.5×10^{4} km

A 1.09×10^{-1}
B 1.09×10^{2}
C 1.09×10^{4}
D 1.09×10^{5}

4 Ungkapkan $36_8 + 23_5$ sebagai nombor dalam asas dua.

A 11000_2
B 100001_2
C 101011_2
D 111011_2

5 Diberi bahawa x ialah nombor dalam asas dua dengan keadaan $10000_2 < x < 23_8$. Tentukan nilai x yang mungkin

A 10010_2
B 10011_2
C 10100_2
D 10101_2

*Answer **all** questions*

1 Round off 89119 correct to two significant figures.

A 89
B 890
C 8900
D 89000

2 $\frac{(8.5\times10^{2})^{3}}{\sqrt{1.6\times10^{5}}} =$

A 1.535×10^{2}
B 1.535×10^{6}
C 2.125×10^{3}
D 2.125×10^{4}

3 The speed of a jet is 230 ms^{-1}. Calculate the time taken, in seconds, for the jet to travel 2.5 x 10^{4} km.

A 1.09×10^{-1}
B 1.09×10^{2}
C 1.09×10^{4}
D 1.09×10^{5}

4 Express $36_8 + 23_5$ as a number in base two.

A 11000_2
B 100001_2
C 101011_2
D 111011_2

5 Given that x is a number in base two such that $10000_2 < x < 23_8$. Determine the possible value of x.

A 10010_2
B 10011_2
C 10100_2
D 10101_2

6 Rajah 1 menunjukkan ABF ialah segitiga kaki sama dengan $AF = BF$ dan $\angle ABF = 70^o$. ABC selari dengan FE, DC selari dengan FB dan ED selari dengan FA.

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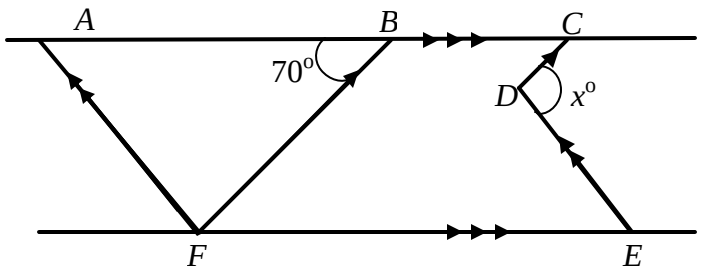
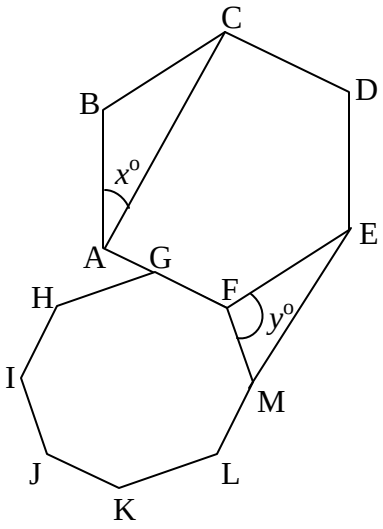


RAJAH 1

Nilai x ialah

A 110
B 125
C 130
D 140

7 Dalam Rajah 2, $ABCDEF$ dan $FGHIJKLM$ adalah dua buah poligon sekata.



RAJAH 2

Carikan nilai $x + y$

A 105
B 135
C 150
D 165

6 Diagram 1 shows ABF is an isosceles triangle, where $AF = BF$ and $\angle ABF = 70^o$. ABC is parallel to FE, DC is parallel to FB and ED is parallel to FA.

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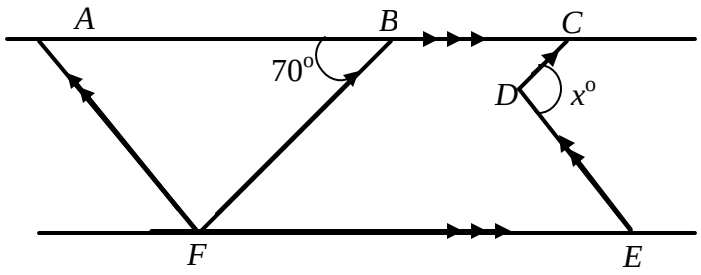


DIAGRAM 1

The value of x is

A 110
B 125
C 130
D 140

7 In Diagram 2, $ABCDEF$ and $FGHIJKLM$ are two regular polygons.

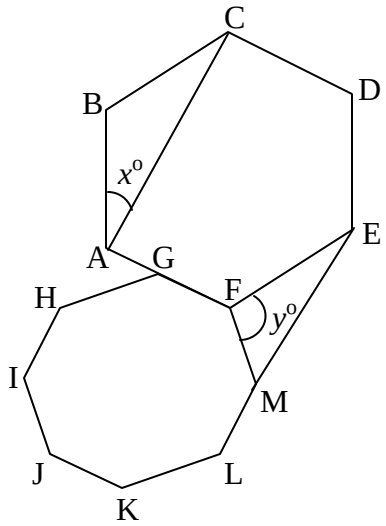
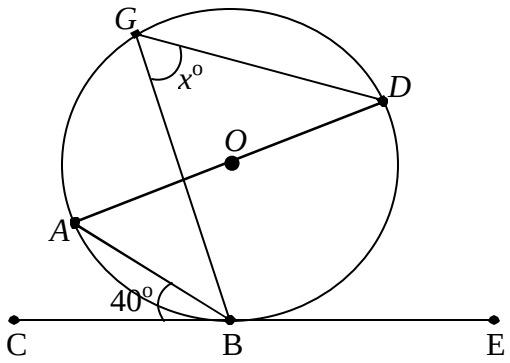


DIAGRAM 2

Find the value of $x + y$

A 105
B 135
C 150
D 165

8 Rajah 3 menunjukkan *CBE* ialah tangen kepada bulatan berpusat *O*, di titik *B*. *AOD* ialah diameter dan $\angle ABC = 40^{o}$.

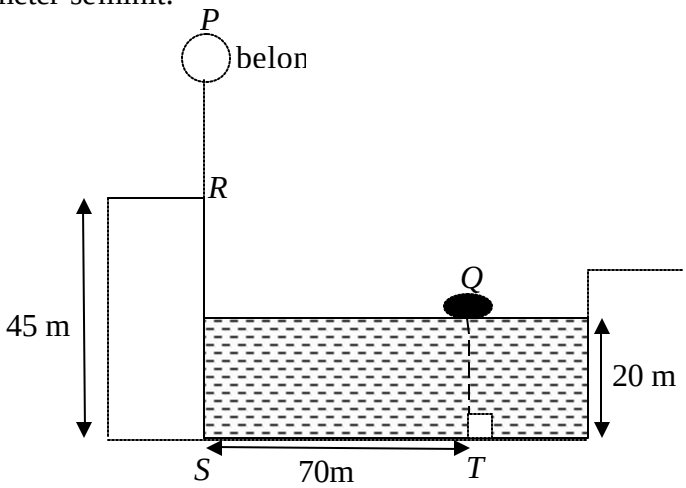


RAJAH 3

Carikan nilai *x*

A 40
B 50
C 60
D 80

9 Rajah 4 menunjukkan sebiji belon bergerak tegak ke atas dari *R* dengan kadar 4 meter seminit.



RAJAH 4

Diberi sudut dongak belon pada *P* dari bola *Q* ialah 42° Hitungkan jumlah masa yang diambil oleh belon untuk tiba di *P* (dalam minit yang hampir)

A 16 minit
B 13 minit
C 10 minit
D 9 minit

8 Diagram 3 shows that *CBE* is a tangent to the circle centre *O*, at point *B*. *AOD* is a diameter and $\angle ABC = 40^{o}$.

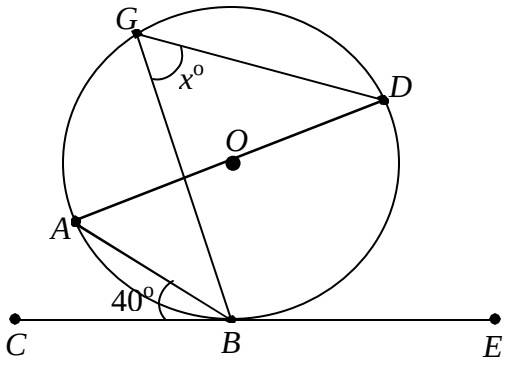


DIAGRAM 3

Find the value of *x*

A 40
B 50
C 60
D 80

9 Diagram 4 shows that a balloon is moving upwards vertically from *R* at the rate of 4 meters per minute.

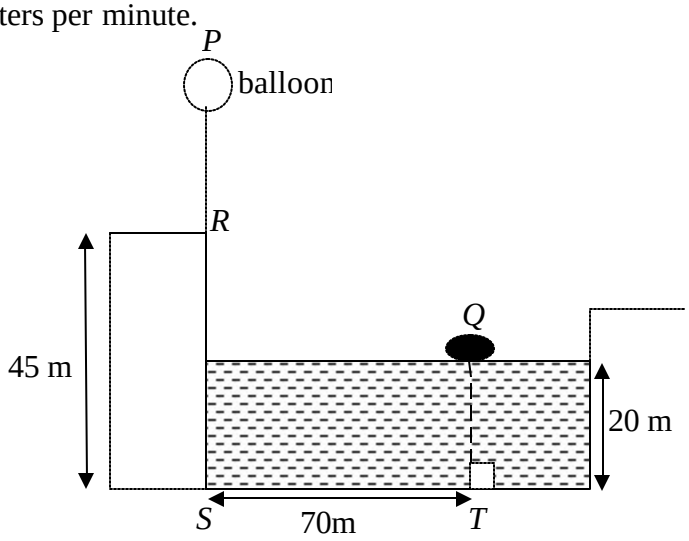
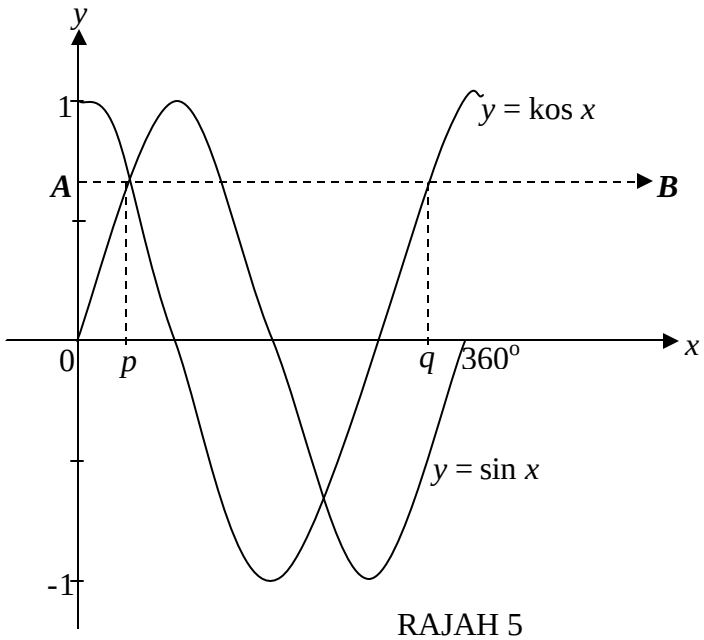


DIAGRAM 4

Given the angle of elevation of the balloon at *P* from the ball *Q* is 42^{o}. Calculate the time taken for the balloon to reach *P* (to the nearest minute)

A 16 minutes
B 13 minutes
C 10 minutes
D 9 minutes

10 Rajah 5 menunjukkan graf $y = \text{kos } x$ dan graf $y = \sin x$. Garis AB melalui titik persilangan kedua-dua graf tersebut.

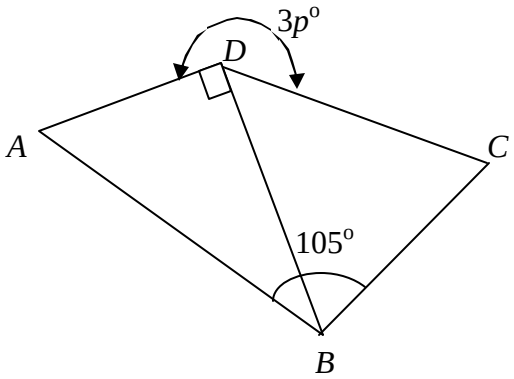


RAJAH 5

Carikan nilai ***q – 2p.***

A 210^o
B 225^o
C 240^o
D 270^o

11. Dalam Rajah 6, BCD ialah segitiga kaki sama dengan keadaan $BD = CD$. Diberi $AB = 2AD$, sudut refleks $ADC = 3p^o$ dan $\angle ABC = 105^o$.



RAJAH 6

Nilai sin p^o =

A 0.8660
B 0.9063
C 0.9848
D 0.9910

10 Diagram 5 shows the graphs of $y = \cos x$ and $y = \sin x$. AB passes through the point of intersection of the two graphs.

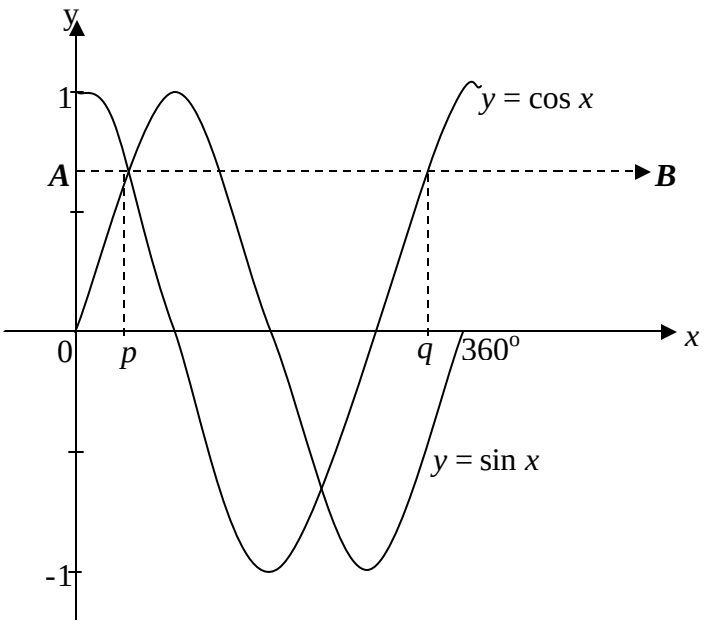


DIAGRAM 5

Find the value of $\boldsymbol{q - 2p}$.

A 210^o
B 225^o
C 240^o
D 270^o

11. In Diagram 6, BCD is an isosceles triangle such that $BD = CD$. Given that $AB = 2AD$, the reflex angle $ADC = 3p^o$ and $\angle ABC = 105^o$.

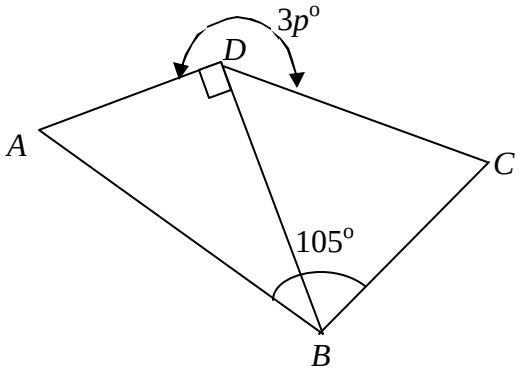
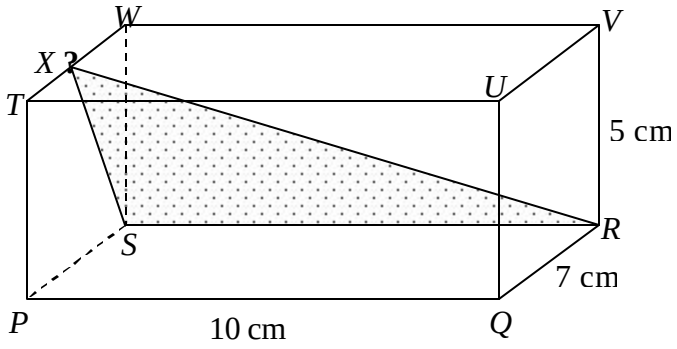


DIAGRAM 6

The value of $\sin p^o =$

A 0.8660
B 0.9063
C 0.9848
D 0.9910

12 Rajah 7 menunjukkan sebuah kuboid. *X* adalah titik tengah *TW*.



RAJAH 7

Hitung sudut di antara satah *XRS* dan *SRVW*.

A 34.99^{o}

B 35.54^{o}

C 54.46^{o}

D 55.01^{o}

13. Dua buah bot *R* dan *S* berlepas dari Pulau Mutiara. Bot *R* bergerak ke timur dengan kelajuan 20 km sejam manakala bot *S* bergerak ke selatan dengan kelajuan 30 km sejam. Selepas 2 jam, bot *R* dan bot *S* tiba di destinasi masing-masing iaitu *M* dan *N*. Carikan bearing titik *N* dari *M*.

A $033^{o}\ 41'$

B $056^{o}\ 19'$

C $213^{o}\ 41'$

D $236^{o}\ 19'$

12 Diagram 7 shows a cuboid. X is the midpoint of TW.

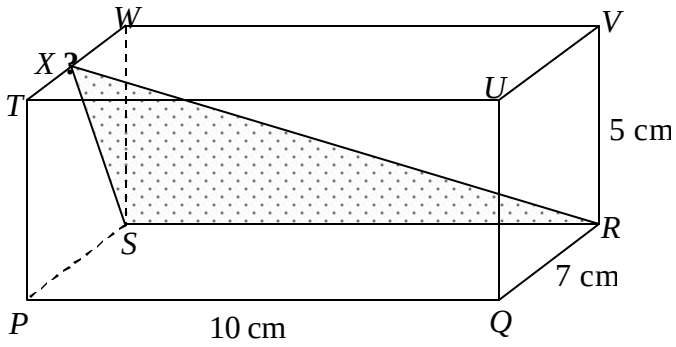


DIAGRAM 7

Calculate the angle between the planes XRS and $SRVW$.

A 34.99^{o}

B 35.54^{o}

C 54.46^{o}

D 55.01^{o}

13. Two boats R and S departed from Pulau Mutiara. Boat R sailed due east at the speed of 20 km per hour while boat S sailed due south at the speed of 30 km per hour. After 2 hours, boat R and boat S reached their destinations at M and N respectively. Find the bearing of N from M.

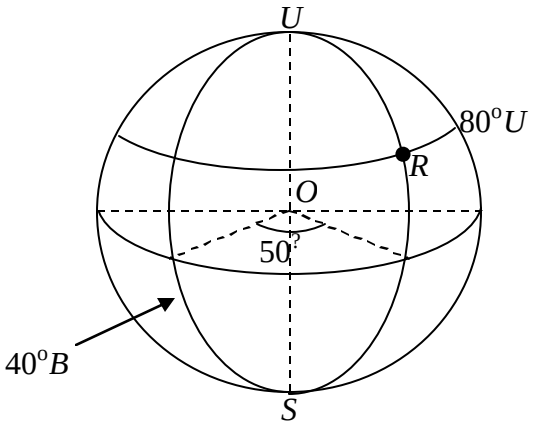
A $033^{o}\ 41'$

B $056^{o}\ 19'$

C $213^{o}\ 41'$

D $236^{o}\ 19'$

14 Rajah 8 menunjukkan *U* ialah Kutub Utara, *S* ialah Kutub Selatan dan *UOS* ialah paksi bumi.



RAJAH 8

Diberi *R* ialah titik di atas permukaan bumi. Kedudukan *R* ialah

A (80° *U*, 10° *T*)

B (80° *U*, 90° *B*)

C (10° *U*, 10° *T*)

D (10° *U*, 90° *B*)

15. *X* (60°*U*, 35°*B*) dan *Y* adalah dua titik di atas permukaan bumi. Diberi jarak terpendek *XY* melalui Kutub Utara ialah 2700 batu nautikal. Carikan kedudukan titik *Y*.

A (75° *U*, 35° *B*)

B (15° *U*, 145° *T*)

C (75° *U*, 145° *T*)

D (15° *U*, 35° *B*)

14 Diagram 8 shows *N* is the North Pole, *S* is the South Pole and *NOS* is the axis of the earth.

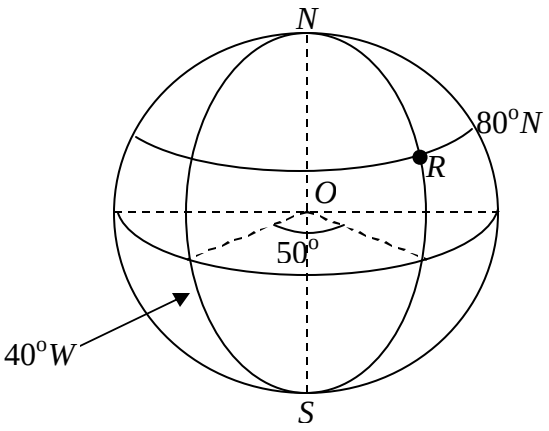


DIAGRAM 8

Given that *R* is a point on the earth's surface. The position of *R* is

A $(80^{o}\ N, 10^{o}\ E)$

B $(80^{o}\ N, 90^{o}\ W)$

C $(10^{o}\ N, 10^{o}\ E)$

D $(10^{o}\ N, 90^{o}\ W)$

15. *X* $(60°N, 35°W)$ and *Y* are two points on the earth's surface. Given that the shortest distance of *XY* via the North Pole is 2700 nautical miles. Find the position of *Y*.

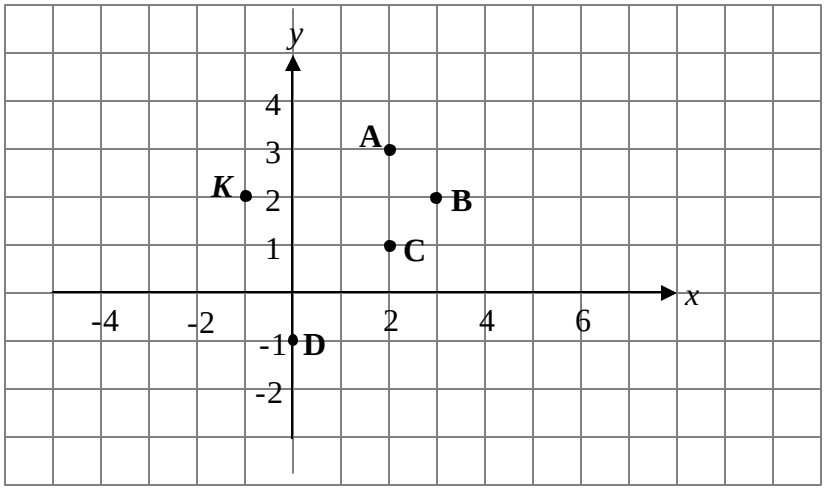
A $(75^{o}\ N, 35^{o}\ W)$

B $(15°\ N, 145^{o}\ E)$

C $(75°\ N, 145^{o}\ E)$

D $(15°\ N, 35^{o}\ W)$

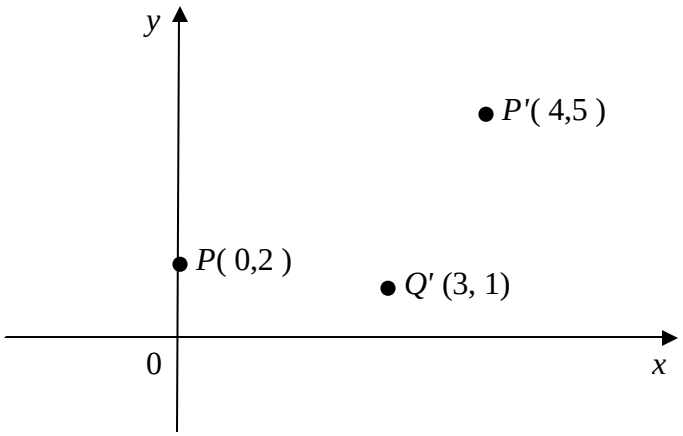
16 Rajah 9 menunjukkan beberapa titik pada suatu satah Cartesan.



RAJAH 9

Antara titik-titik, **A**, **B**, **C** dan **D** yang manakah imej bagi titik ***K*** di bawah putaran 90^o mengikut arah jam pada pusat (1, 1) ?

17 Dalam Rajah 10, P' ialah imej bagi P di bawah satu translasi tertentu.
Q' ialah imej bagi Q di bawah translasi yang sama.



RAJAH 10

Cari koordinat Q .

A (7, 4)
B (6, 5)
C (0, -3)
D (-1,-2)

16 Diagram 9 shows points plotted on a Cartesian plane.

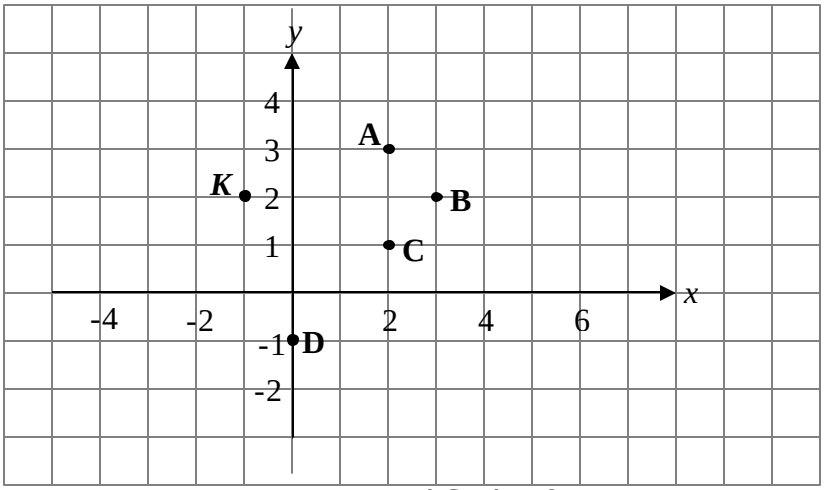


DIAGRAM 9

Which of the following points, **A**, **B**, **C** or **D** is the image of point ***K*** under a clockwise rotation of 90^{o} about the centre (1, 1)?

17 In Diagram 10, P' is the image of P under certain translation.
Q' is the image of Q under the same translation.

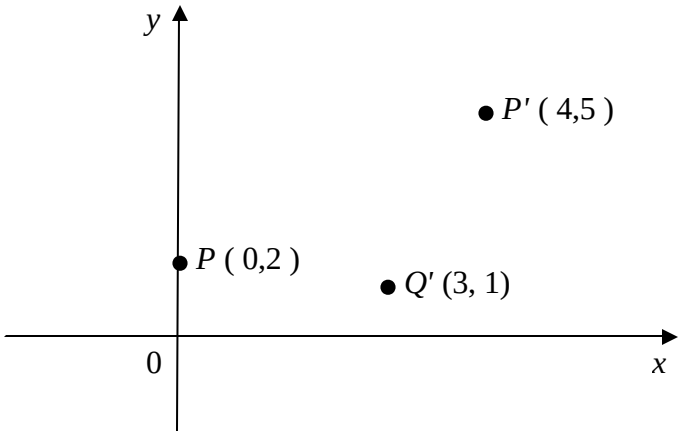
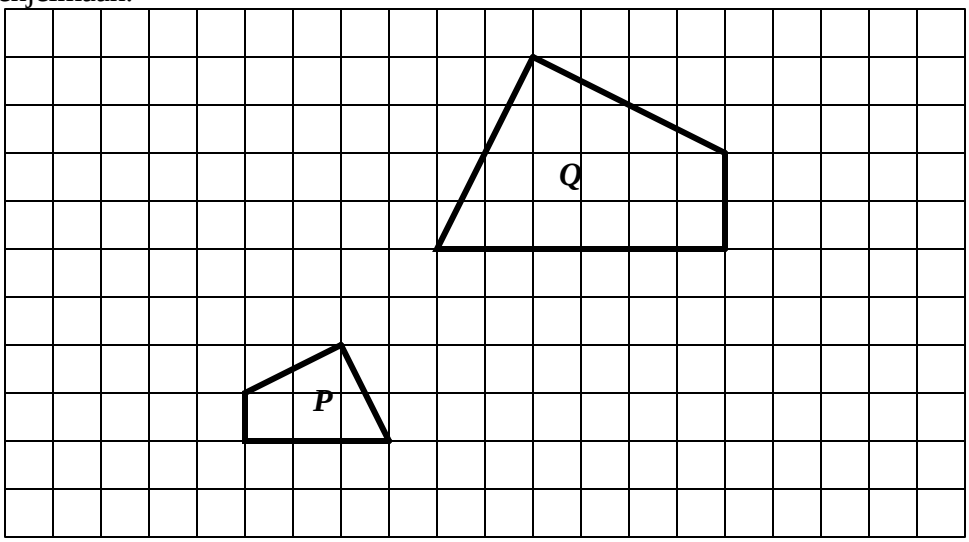


DIAGRAM 10

Find the coordinate of Q.

A (7, 4)
B (6, 5)
C (0, -3)
D (-1,-2)

18 Dalam Rajah 11, sisiempat *Q* ialah imej bagi sisiempat *P* di bawah gabungan dua penjelmaan.



RAJAH 11

Dua penjelmaan yang mungkin ialah

A pantulan diikuti pembesaran

B pembesaran diikuti putaran.

C putaran diikuti pembesaran

D translasi diikuti pembesaran.

19 Faktorkan $(2p+3)(p-2)-14+4p$.

A $(2p+7)(p-2)$

B $(2p-7)(p+2)$

C $(2p+5)(p-4)$

D $(2p-5)(p+4)$

20 Diberi $2u-\frac{1}{3}v=-3$ dan $v+6u+3=0$. Cari nilai *u* dan nilai *v*.

A $u=-\frac{3}{2}$, $v=6$

B $u=-\frac{1}{2}$, $v=6$

C $u=-1$, $v=3$

D $u=-1$, $v=-3$

18 In Diagram 11, quadrilateral Q is the image of quadrilateral P under the combination of two transformations.

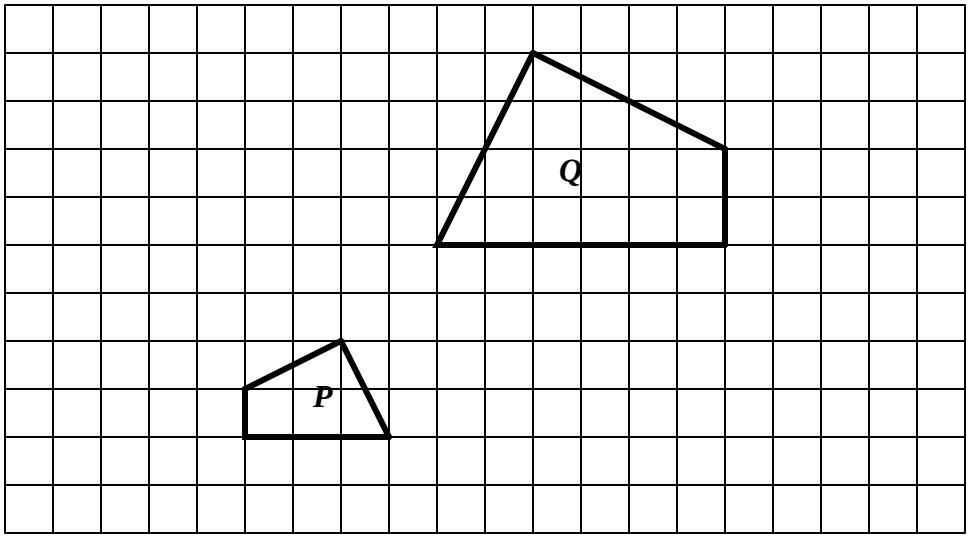


DIAGRAM 11

The two transformations are

A a reflection followed by an enlargement

B an enlargement followed by a rotation

C a rotation followed by an enlargement

D a translation followed by an enlargement.

19 Factorise $(2p+3)(p-2)-14+4p$.

A $(2p+7)(p-2)$

B $(2p-7)(p+2)$

C $(2p+5)(p-4)$

D $(2p-5)(p+4)$

20 Given that $2u-\frac{1}{3}v=-3$ and $v + 6u + 3 = 0$. Find the value of u and of v.

A $u=-\frac{3}{2}$, $v = 6$

B $u=-\frac{1}{2}$, $v = 6$

C $u = -1$, $v = 3$

D $u = -1$, $v = -3$

21 $\frac{3}{2p} - \frac{5-p}{8p^2} =$

A $\frac{7+p}{8p^2}$

B $\frac{7-p}{8p^2}$

C $\frac{11p-5}{8p^2}$

D $\frac{13p-5}{8p^2}$

22 Diberi $\frac{5r-4}{3} = 8-(r-2)$, maka $r =$

A $\frac{11}{4}$

B $\frac{17}{4}$

C 5

D 17

23 Diberi $\frac{2\sqrt{k}-3}{5} = \frac{\sqrt{k}+3}{m}$, maka $k =$

A $\frac{3(5+m)}{2m-5}$

B $9\left(\frac{5+m}{2m-5}\right)^2$

C $\frac{9(5+m)^2}{2m-5}$

D $\sqrt{\frac{3(5+m)}{2m-5}}$

21 $\frac{3}{2p}-\frac{5-p}{8p^2}=$

A $\frac{7+p}{8p^2}$

B $\frac{7-p}{8p^2}$

C $\frac{11p-5}{8p^2}$

D $\frac{13p-5}{8p^2}$

22 Given that $\frac{5r-4}{3}=8-(r-2)$, then $r=$

A $\frac{11}{4}$

B $\frac{17}{4}$

C 5

D 17

23 Given that $\frac{2\sqrt{k}-3}{5}=\frac{\sqrt{k}+3}{m}$, then $k=$

A $\frac{3(5+m)}{2m-5}$

B $9\left(\frac{5+m}{2m-5}\right)^2$

C $\frac{9(5+m)^2}{2m-5}$

D $\sqrt{\frac{3(5+m)}{2m-5}}$

24 Permudahkan $\frac{8x^3y^4 - 12x^2y^3}{4xy^3}$

A $2x^3y^4 - 12x$

B $2x^3y^4 - 3x$

C $2x^2y - 12x^2y^3$

D $2x^2y - 3x$

25 $\left(\frac{1}{8}\right)^{-\frac{1}{3}} \times (32p^{10})^{\frac{3}{5}} \div (4p^{-2})^{\frac{3}{2}} =$

A $\frac{1}{2}p^3$

B $\frac{1}{2}p^9$

C $2p^3$

D $2p^9$

26 Semua integer x yang memuaskan ketaksamaan $2x + 2 \leq 3x - 8 < 2x + 5$ ialah

A 11, 12

B 10, 11, 12

C 11, 12, 13

D 10, 11, 12, 13

27 Diberi $2\begin{pmatrix} 2 & 6 \\ k & 0 \end{pmatrix} - 3\begin{pmatrix} 4 & -1 \\ -3 & 0 \end{pmatrix} = \begin{pmatrix} -8 & m \\ 11 & 0 \end{pmatrix}$, cari nilai k dan m.

A $k = 10$, $m = 15$

B $k = 7$, $m = 11$

C $k = 1$, $m = 15$

D $k = 1$, $m = 7$

24 Simplify $\frac{8x^3y^4 - 12x^2y^3}{4xy^3}$

A $2x^3y^4 - 12x$

B $2x^3y^4 - 3x$

C $2x^2y - 12x^2y^3$

D $2x^2y - 3x$

25 $\left(\frac{1}{8}\right)^{-\frac{1}{3}} \times (32p^{10})^{\frac{3}{5}} \div (4p^{-2})^{\frac{3}{2}} =$

A $\frac{1}{2}p^3$

B $\frac{1}{2}p^9$

C $2p^3$

D $2p^9$

26 All the integers x that satisfy the inequalities $2x + 2 \leq 3x - 8 < 2x + 5$ are

A 11, 12

B 10, 11, 12

C 11, 12, 13

D 10, 11, 12, 13

27 Given that $2\begin{pmatrix} 2 & 6 \\ k & 0 \end{pmatrix} - 3\begin{pmatrix} 4 & -1 \\ -3 & 0 \end{pmatrix} = \begin{pmatrix} -8 & m \\ 11 & 0 \end{pmatrix}$, find the value of k and m.

A $k = 10$, $m = 15$

B $k = 7$, $m = 11$

C $k = 1$, $m = 15$

D $k = 1$, $m = 7$

28 $\begin{pmatrix}3 & -2\end{pmatrix}\begin{pmatrix}1 & -5\\ 4 & \frac{3}{2}\end{pmatrix}=$

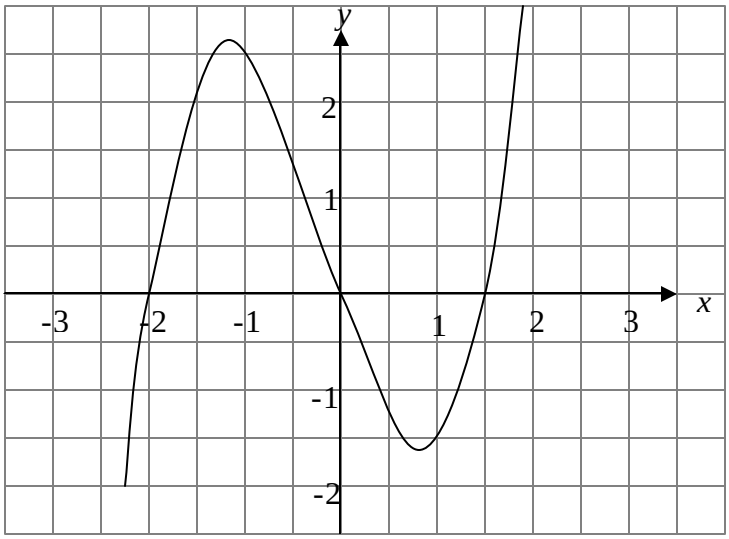
A $\begin{pmatrix}-23\end{pmatrix}$

B $\begin{pmatrix}13\\ 9\end{pmatrix}$

C $\begin{pmatrix}3 & 10\\ 12 & -3\end{pmatrix}$

D $\begin{pmatrix}-5 & -18\end{pmatrix}$

29 Rajah 12 mewakili graf fungsi kubik



RAJAH 12

Di antara berikut yang manakah mewakili fungsi bagi graf tersebut ?

A $y=-x(x-2)(x+\frac{3}{2})$

B $y=-x(x+2)(x-\frac{3}{2})$

C $y=x(x-2)(x+\frac{3}{2})$

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

28 $\begin{pmatrix}3 & -2\end{pmatrix}\begin{pmatrix}1 & -5\\ 4 & \frac{3}{2}\end{pmatrix} =$

A $\begin{pmatrix}-23\end{pmatrix}$

B $\begin{pmatrix}13\\ 9\end{pmatrix}$

C $\begin{pmatrix}3 & 10\\ 12 & -3\end{pmatrix}$

D $\begin{pmatrix}-5 & -18\end{pmatrix}$

29 Diagram 12 represents the graph of a cubic function

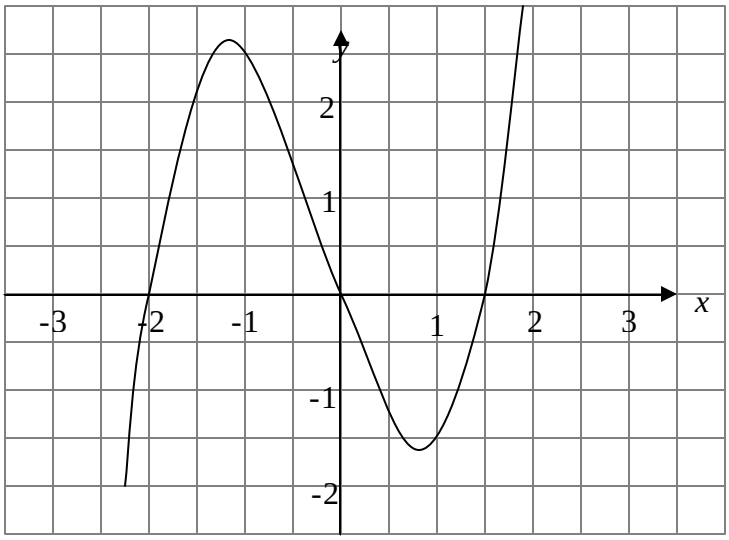


DIAGRAM 12

Which of the following functions represents the graph?

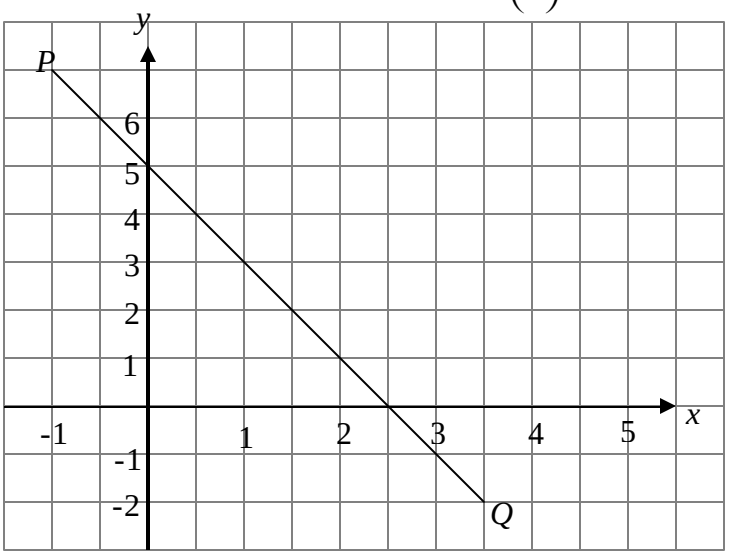
A $y = -x(x-2)(x+\frac{3}{2})$

B $y = -x(x+2)(x-\frac{3}{2})$

C $y = x(x-2)(x+\frac{3}{2})$

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

30 Rajah 13 menunjukkan garis lurus PQ pada suatu satah Cartesan. Garis $P'Q'$ ialah imej bagi garis PQ di bawah translasi $\begin{pmatrix} 2 \\ 1 \end{pmatrix}$.



RAJAH 13

Persamaan garis lurus $P'Q'$ ialah

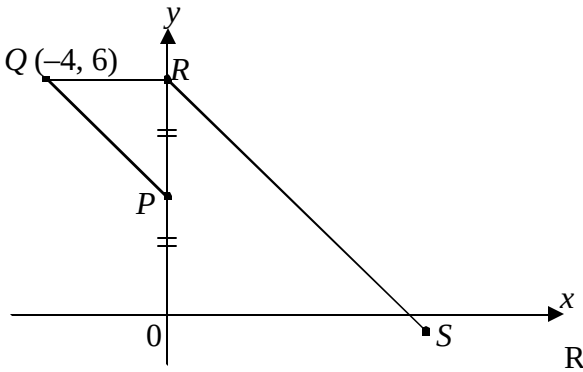
A $y = -2x + 10$

B $2y = -x + 10$

C $2y = -x + 5$

D $y = -2x + 5$

31 Dalam Rajah 14, garis PQ adalah selari dengan garis RS dan garis QR adalah selari dengan paksi–x.



RAJAH 14

Diberi $OP = PR$, cari pintasan–x bagi garis lurus RS.

A 6

B 7

C 8

D 9

30 Diagram 13 shows a straight line PQ on Cartesian plane. $P'Q'$ is the image of PQ under the translation $\begin{pmatrix} 2 \\ 1 \end{pmatrix}$.

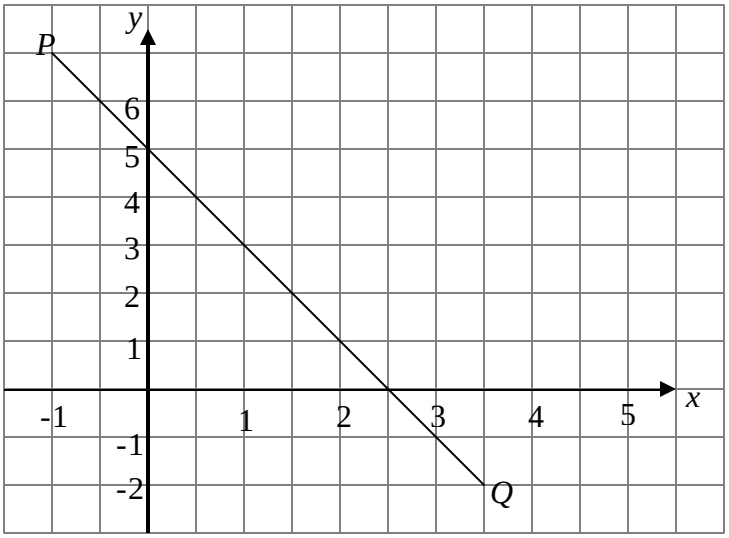


DIAGRAM 13

The equation of the line $P'Q'$ is

A $y = -2x + 10$

B $2y = -x + 10$

C $2y = -x + 5$

D $y = -2x + 5$

31 In Diagram 14, the line PQ is parallel to RS and the line QR is parallel to the x-axis.

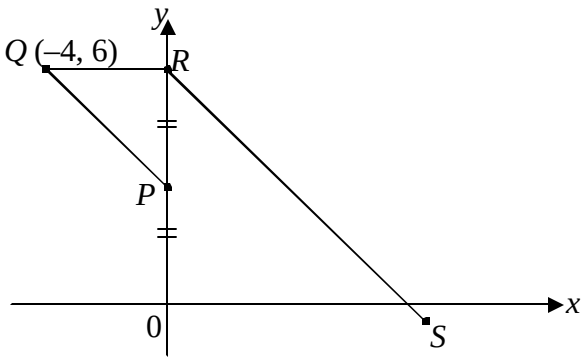


DIAGRAM 14

Given that $OP = PR$, find the x–intercept of line RS.

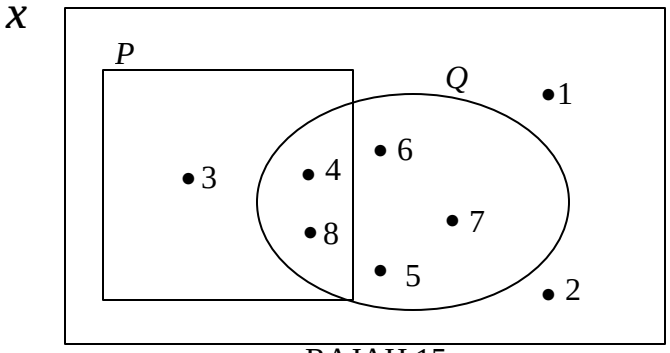
A 6

B 7

C 8

D 9

32 Rajah 15 menunjukkan gambar rajah Venn bagi set semesta ξ, set P dan set Q.



RAJAH 15

Set $P' \cap Q$ ialah

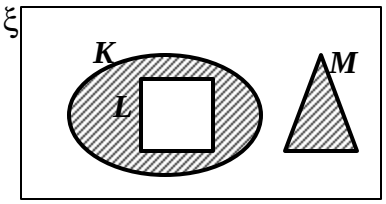
A {4, 8}

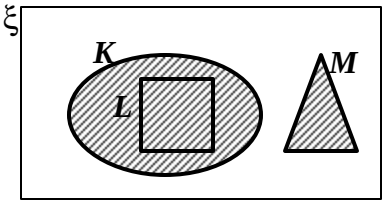
B {5, 6, 7}

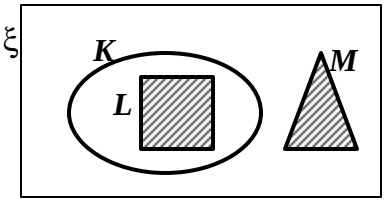
C {1, 2, 5, 6, 7}

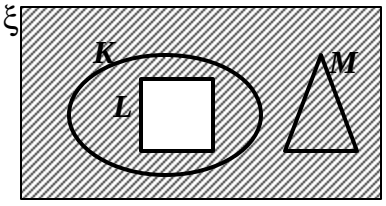
D {4, 5, 6, 7, 8}

33. Di antara gambar rajah Venn di bawah, yang manakah mewakili set $(K \cap L') \cup M$?

A 

B 

C 

D 

32 Diagram 15 shows the Venn diagram of universal set ξ, set P and set Q.

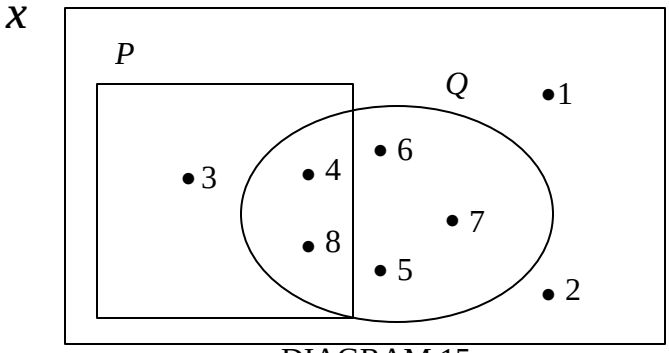


DIAGRAM 15

Set $P' \cap Q$ is

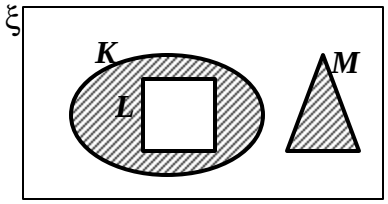
A {4, 8}

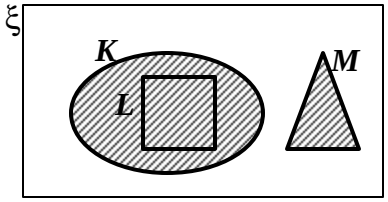
B {5, 6, 7}

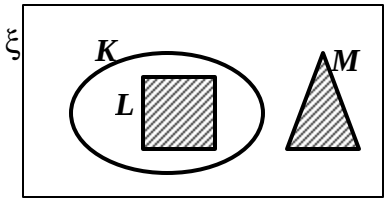
C {1, 2, 5, 6, 7}

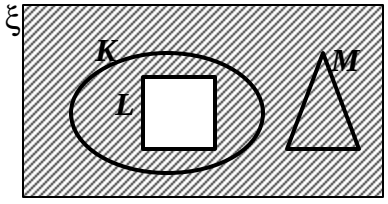
D {4, 5, 6, 7, 8}

33. Which of the following Venn diagram represents the set $(K \cap L') \cup M$?

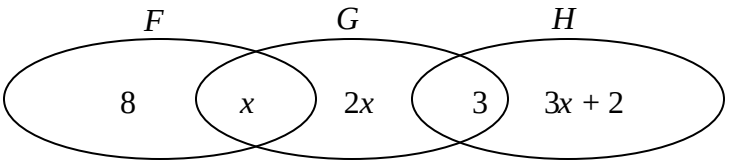
A 

B 

C 

D 

34 Rajah 16 ialah gambar rajah Venn yang menunjukkan bilangan unsur dalam set *F*, set *G* dan set *H*.



RAJAH 16

Diberi set semesta $x = F \cup G \cup H$ dan $n(F \cup G) = n(G \cup H)$. Carikan $n(G)$

A 2

B 4

C 6

D 9

35 Diberi *S* berubah secara songsang dengan p^2 dan $S = 3$ apabila $p = 2$. Cari nilai *S* apabila $p = -4$.

A $\frac{3}{4}$

B $\frac{3}{8}$

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

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

34 Diagram 16 is a Venn diagram that shows the elements of set F, set G dan set H.

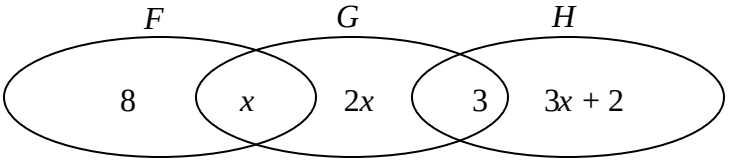


DIAGRAM 16

Given that the universal set $x = F \cup G \cup H$ and $n(F \cup G) = n(G \cup H)$.
Find $n(G)$

A 2

B 4

C 6

D 9

35 Given that S is inversely proportional to p^2 and $S = 3$ if $p = 2$.
Find the value of S when $p = -4$.

A $\frac{3}{4}$

B $\frac{3}{8}$

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

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

36 Jadual 1 menunjukkan nilai-nilai bagi pembolehubah *E*, *F* dan *G*.

E	10	8
F	9	25
G	15	*n*

JADUAL 1

Diberi $E \propto \frac{G}{\sqrt{F}}$, carikan nilai *n*.

A $\frac{20}{3}$

B 20

C $\frac{100}{3}$

D 100

37 Sekumpulan pelajar yang terdiri daripada 60 orang pelajar lelaki dan *x* orang pelajar perempuan mengadakan perkhemahan di Gua Senyum Pahang. Jika seorang pelajar dipilih secara rawak daripada kumpulan itu, kebarangkalian seorang pelajar perempuan dipilih ialah $\frac{2}{5}$. Hitungkan nilai *x*.

A 24

B 36

C 40

D 90

36 Table 1 shows the values of variables of E, F and G.

E	10	8
F	9	25
G	15	n

TABLE 1

Given that $E \propto \frac{G}{\sqrt{F}}$, find the value of n.

A $\frac{20}{3}$

B 20

C $\frac{100}{3}$

D 100

37 A group of students consisting of 60 boys and x girls are camping at Gua Senyum Pahang. If a student is chosen at random from the group, the probability that a girl is chosen is $\frac{2}{5}$. Calculate the value of x.

A 24

B 36

C 40

D 90

38 Jadual 2 menunjukkan bilangan pelajar yang telah menyediakan laporan kajian "*Schoolwide Enrichment Model*".

	Laporan Saintifik	Laporan Reka Cipta
Lelaki	6	9
Perempuan	3	7

JADUAL 2

Jika dua orang pelajar dipilih secara rawak, hitungkan kebarangkalian kedua-duanya menulis laporan Reka Cipta.

A $\frac{2}{5}$

B $\frac{256}{625}$

C $\frac{21}{50}$

D $\frac{19}{40}$

38 Table 2 shows the number of students who have written *Schoolwide Enrichment Model* research reports.

	Scientific Reports	Reka Cipta Reports
Boys	6	9
Girls	3	7

TABLE 2

If two students are chosen at random, calculate the probability that both students write the Reka Cipta report.

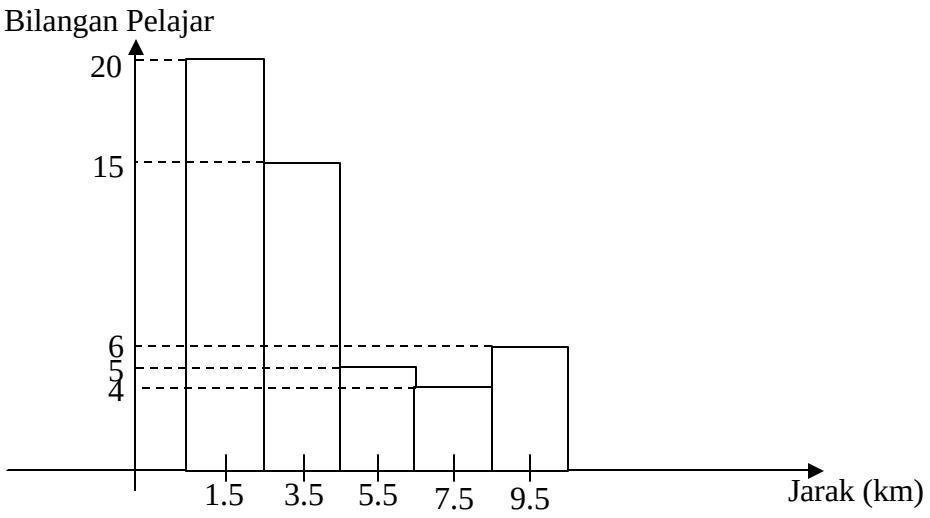
A $\frac{2}{5}$

B $\frac{256}{625}$

C $\frac{21}{50}$

D $\frac{19}{40}$

39 Rajah 17 ialah sebuah histogram yang menunjukkan jarak, dalam km, dari rumah ke sekolah, bagi 50 orang pelajar.



RAJAH 17

Carikan peratus pelajar yang tinggal dalam jarak kurang dari 6.5 km dari sekolah.

A 88%

B 80%

C 70%

D 10%

40 Jadual 3 menunjukkan taburan kekerapan skor dalam satu pertandingan memanah.

Skor	0	1	2	3	4
Bilangan percubaan	2	3	5	4	*m*

JADUAL 3

Jika median ialah 3, maka nilai minimum *m* ialah

A 13

B 10

C 7

D 6

KERTAS SOALAN TAMAT

39 Diagram 17 is a histogram which shows the distance, in km, between their houses and school, for 50 students.

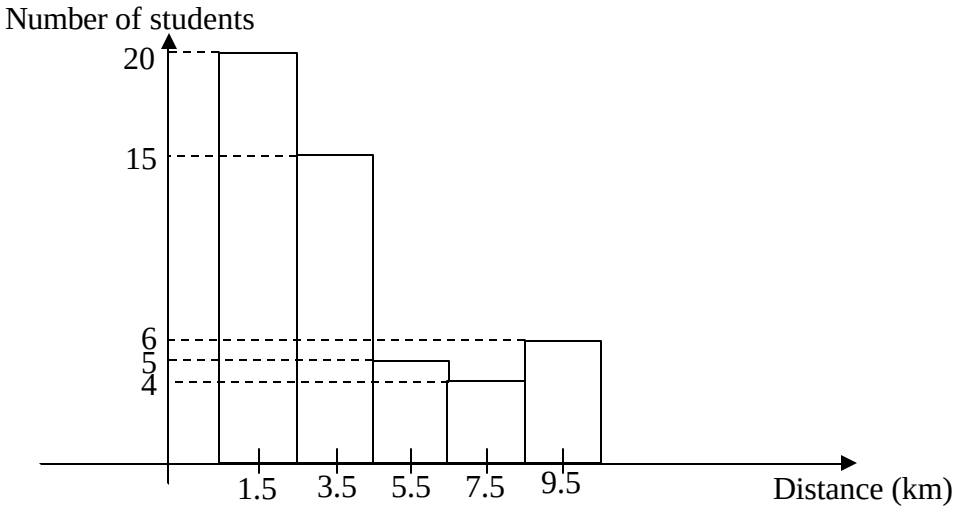


DIAGRAM 17

Find the percentage of the number of students whose houses is less than 6.5 km from the school.

A 88%

B 80%

C 70%

D 10%

40 Table 3 shows the frequency distribution of scores in an archery competition.

Score	0	1	2	3	4
Number of attempts	2	3	5	4	*m*

TABLE 3

If the median is 3, then the minimum value of *m* is

A 13

B 10

C 7

D 6

END OF QUESTION PAPER