

SULIT



JABATAN PELAJARAN NEGERI TERENGGANU

**UJIAN PENGESANAN TOV
SIJIL PELAJARAN MALAYSIA 2012
MATHEMATICS**

1449/1

**Kertas 1
Februari
2012**

$1\frac{1}{4}$ jam

Satu jam lima belas minit

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 belakang kertas soalan ini.*

TERENGGANU NEGERI ANJUNG ILMU

Disediakan oleh:
Guru AKRAM Terengganu

Dengan kerjasama:
MPSM Negeri Terengganu

Dibiayai oleh:
Kerajaan Negeri Terengganu

Dicetak oleh:
Percetakan Yayasan Islam Terengganu Sdn. Bhd.
Telefon: 609-666 8611/6652/8601 Faks: 609-666 0611/0063

Kertas soalan ini mengandungi 32 halaman bercetak

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 $a^m \div a^n = a^{m-n}$

3 $(a^m)^n = a^{mn}$

4 $A^{-1} = \frac{1}{ad-bc} \begin{pmatrix} d & -b \\ -c & a \end{pmatrix}$

5 Distance / Jarak

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

6 Midpoint / Titik tengah

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

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

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

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

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

9 Mean = $\frac{\text{sum of (classmark} \times \text{frequency)}}{\text{sum of frequencies}}$

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

10 Pythagoras Theorem
Teorem Pithagoras

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

11 $P(A) = \frac{n(A)}{n(S)}$

12 $P(A') = 1 - P(A)$

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

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

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

**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 = $2\pi rh$
Luas permukaan melengkung silinder = $2\pi jt$
- 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
Hasil tambah sudut pedalaman poligon
 $= (n - 2) \times 180^\circ$

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

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

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

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

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

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

$$15 \quad \text{Area of image} = k^2 \times \text{area of object}$$

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

- 1 Round off 0.0256 correct to two significant figures

Bundarkan 0.0256 kepada dua angka bererti

- A 0.026
- B 0.025
- C 0.03
- D 0.02

- 2 Express 8.306×10^{-5} as a single number.

Ungkapkan 8.306×10^{-5} sebagai satu nombor tunggal

- A 830 600
- B 83 060
- C 0.08306
- D 0.00008306

- 3 $6.31 \times 10^{-4} - 4 \times 10^{-6} =$

- A 2.31×10^{-4}
- B 5.91×10^{-4}
- C 6.27×10^{-4}
- D 6.35×10^{-4}

- 4 The speed of an object is 150 ms^{-1} . Calculate the time taken, in seconds, if the distance travel by the object is $2.88 \times 10^4 \text{ km}$.

Kelajuan sebuah objek ialah 150 ms^{-1} . Hitungkan masa, dalam saat, jika jarak objek itu bergerak ialah sejauh $2.88 \times 10^4 \text{ km}$.

- A 4.32×10^9
- B 1.92×10^5
- C 4.32×10^6
- D 1.92×10^2

5 Express 3204_5 as a number in base ten.

Ungkapkan 3204_5 sebagai nombor dalam asas sepuluh.

A 429

B 204

C 110

D 69

6 $110100_2 - 1010_2$

A 110010_2

B 101110_2

C 101010_2

D 101000_2

7 State the value, in base ten, of the digit 3 in the number 2314_5 .

Nyatakan nilai, dalam asas sepuluh bagi digit 3 dalam nombor 2314_5 .

A 15

B 30

C 45

D 75

8 Diagram 8 shows regular polygons $PQRST$ and $UVWXY$.

Rajah 8 menunjukkan poligon sekata $PQRST$ dan $UVWXY$.

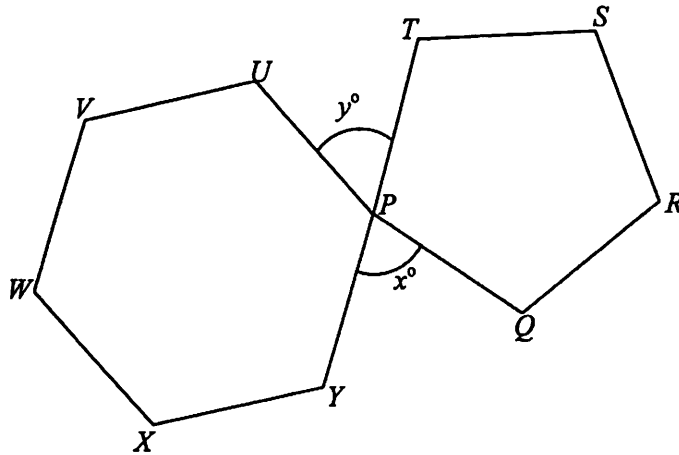


Diagram 8 / Rajah 8

Find the value of $x + y$.

Carikan nilai $x + y$.

- A 228
- B 132
- C 120
- D 108

- 9 Diagram 9 shows a regular hexagon $JKLMNO$ with ONP and $JKQR$ are straight lines.

Rajah 9 menunjukkan sebuah heksagon sekata $JKLMNO$ dengan ONP dan $JKQR$ ialah garis lurus.

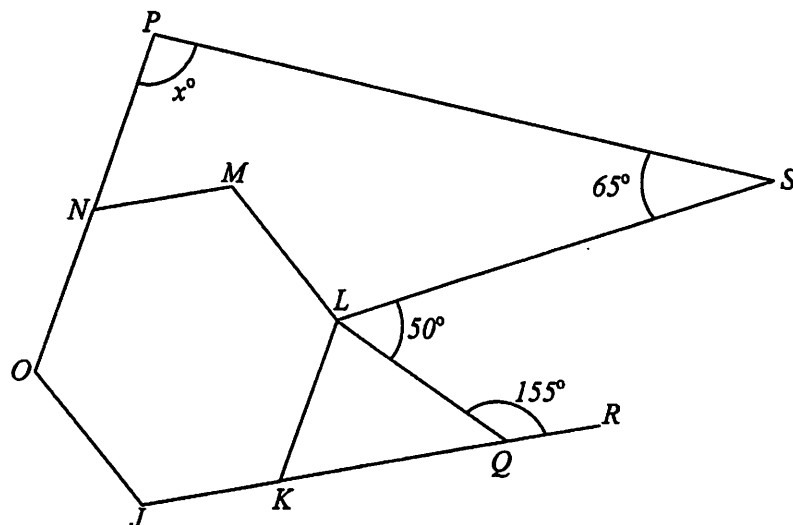


Diagram 9 / Rajah 9

Find the value of x .

Carikan nilai x .

- A 75
- B 80
- C 85
- D 95

10 Diagram 10 shows four vertices P , Q , R and S of a regular polygon with centre O .

Rajah 10 menunjukkan empat bucu P , Q , R dan S bagi poligon sekata dengan pusat O .

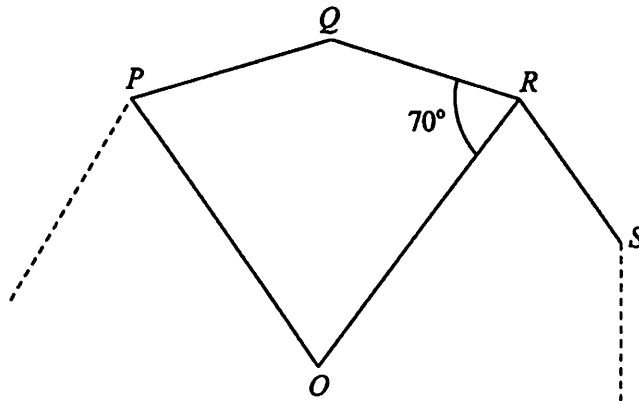


Diagram 10 / *Rajah 10*

The number of sides of the polygon are

Bilangan sisi poligon itu ialah

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

- 11 In Diagram 11, O is the centre of the circle. RST is a tangent to the circle SQP at S . Given that PSM is a straight line and POQ is the diameter of the circle.

Dalam Rajah 11, O ialah pusat bulatan. RST ialah tangen kepada bulatan SQP di S . Diberi bahawa PSM ialah garis lurus dan POQ ialah diameter bulatan.

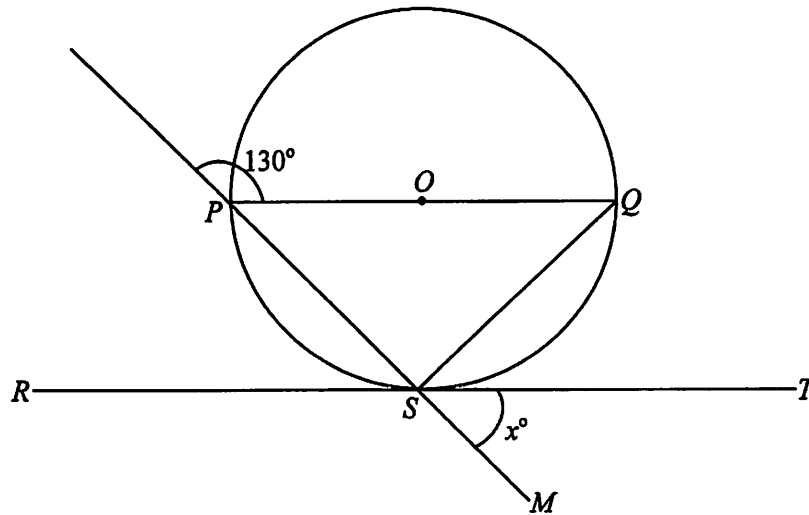


Diagram 11 / Rajah 11

Find the value of x

Cari nilai x

- A 30
- B 40
- C 50
- D 65

- 12 In Diagram 12, triangle XYZ is the image of triangle EFG under a clockwise rotation of 90° .

Dalam Rajah 12, segitiga XYZ ialah imej bagi segitiga EFG di bawah satu putaran 90° ikut arah jam.

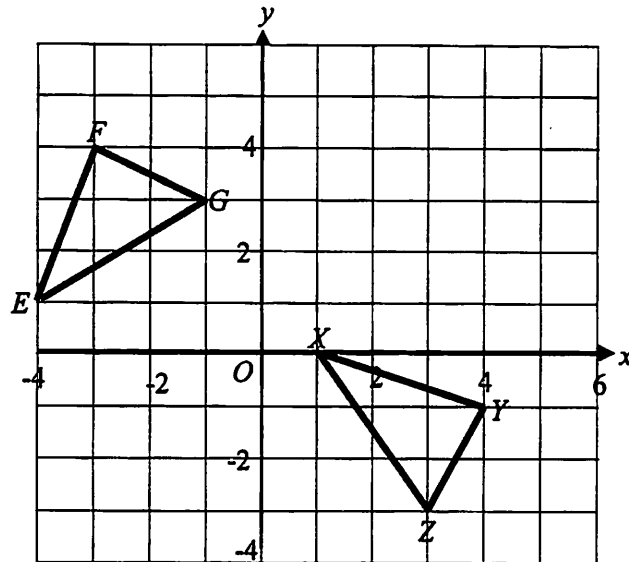


Diagram 12 / Rajah 12

Find the coordinate of the centre of the rotation.

Cari koordinat pusat putaran.

- A $(-3, -2)$
- B $(-2, -3)$
- C $(-3, -3)$
- D $(-2, -2)$

- 13 In Diagram 13, shows two pentagons drawn on square grids. Pentagon PABCD is the image of pentagon PQRST under an enlargement.

Dalam Rajah 13, menunjukkan dua pentagon yang dilukis pada grid segi empat sama. Pentagon PABCD ialah imej bagi pentagon PQRST di bawah suatu pembesaran.

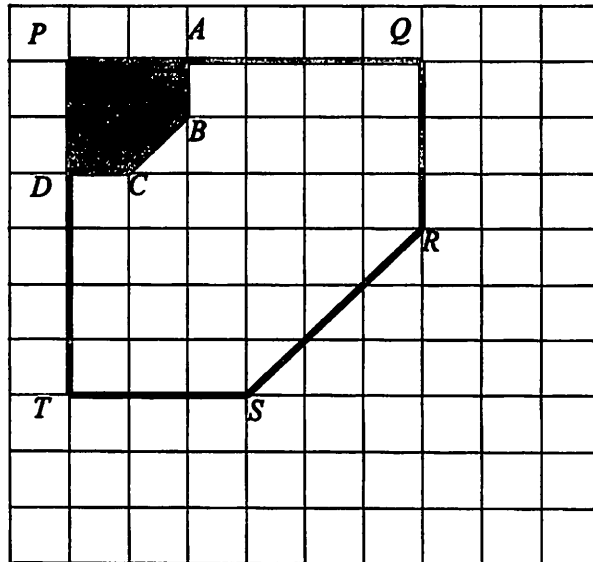


Diagram 13 / Rajah 13

Find the scale factor of the enlargement.

Cari faktor skala pembesaran itu.

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

- 14 The point $(6, 7)$ is the image of the point $(6, -3)$ under a reflection at the line $y = k$. Find the value of k .

*Titik $(6, 7)$ adalah imej bagi $(6, -3)$ di bawah pantulan pada garis $y = k$.
Cari nilai k .*

- A 1
B 2
C 3
D 4

- 15 In Diagram 15, O is the origin of a Cartesian plane and OQ is a straight line.

Dalam Rajah 15, O ialah asalan pada satah Cartesian dan OQ ialah suatu garis lurus.

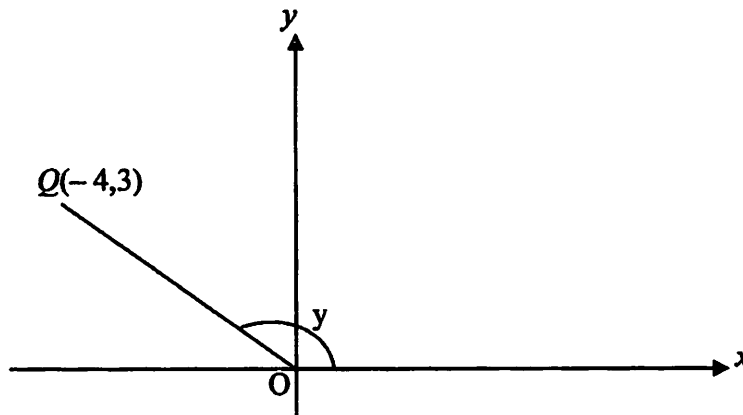


Diagram 15 / Rajah 15

Find the value of $\cos y$

Cari nilai bagi kos y

- A $-\frac{4}{5}$
B $-\frac{3}{5}$
C $\frac{3}{5}$
D $\frac{4}{5}$

- 16 Diagram 16 shows the graph of $y = \cos x$ for $0^\circ \leq x \leq 360^\circ$.
Rajah 16 menunjukkan graf bagi $y = \cos x$ bagi $0^\circ \leq x \leq 360^\circ$

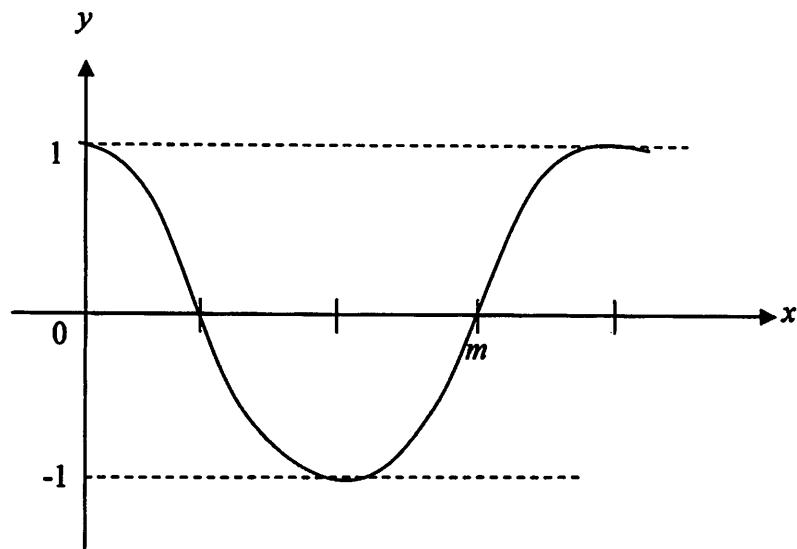


Diagram 16 / Rajah 16



The value of m is

Nilai bagi m ialah.

- A 0°
- B 90°
- C 180°
- D 270°

- 17 Diagram 17 is a pictogram which shows the sales of books in January and February. The sales in March are not shown.

Rajah 17 ialah piktograf yang menunjukkan jualan buku pada bulan Januari dan Februari. Jualan pada bulan Mac tidak ditunjukkan.

January <i>Januari</i>	
February <i>Februari</i>	
March <i>Mac</i>	



Represents 30 books
Mewakili 30 buah buku

Diagram 17 / *Rajah 17*

The sales in March is $\frac{3}{10}$ of the total sales during the three months from January to March. Find the number of books sold in March.

Jualan pada bulan Mac ialah $\frac{3}{10}$ daripada jumlah jualan sepanjang tiga bulan itu, dari bulan Januari hingga bulan Mac. Cari bilangan buku yang dijual pada bulan Mac.

- A 60
- B 90
- C 210
- D 300

- 18 Diagram 18 shows a right-angled triangular prism with the horizontal rectangular base, $PQRS$.

Rajah 18 menunjukkan sebuah prisma segitiga tegak dengan tapak mengufuk segiempat tepat $PQRS$.

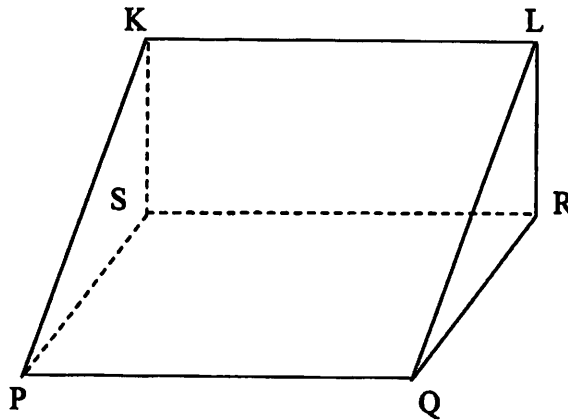


Diagram 18 / Rajah 18

What is the angle between the line KQ and the base $PQRS$?

Apakah sudut di antara garis KQ dengan tapak $PQRS$?

- A $\angle KQP$
- B $\angle KQR$
- C $\angle KQS$
- D $\angle KRQ$

- 19 Diagram 19 shows a cuboid with a rectangular base $PQRS$. Given that X , Y and Z are the midpoints of TW , PS and QR respectively.

Rajah 19 menunjukkan sebuah kuboid dengan tapak segiempat tepat $PQRS$. Diberi bahawa X , Y dan Z masing-masing ialah titik tengah TW , PS dan QR .

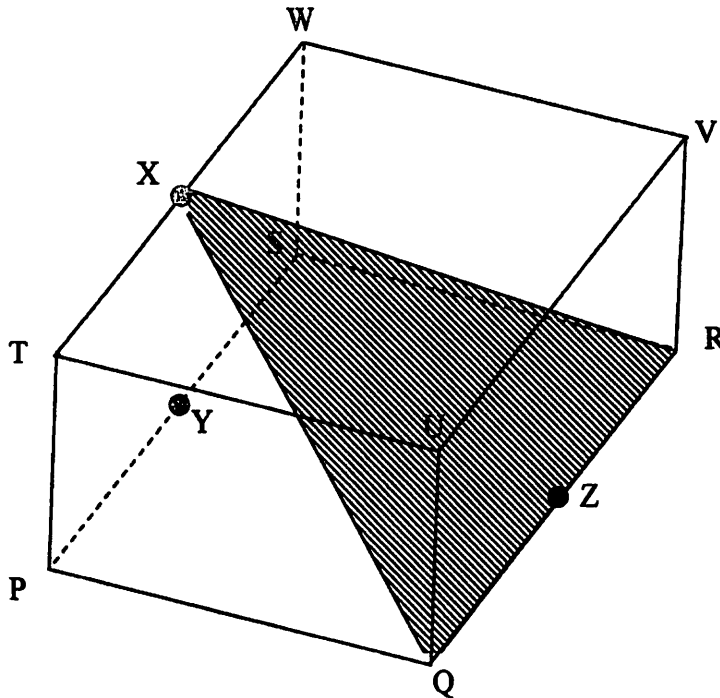


Diagram 19 / Rajah 19

Name the angle between the plane QRX and the plane $PQRS$?

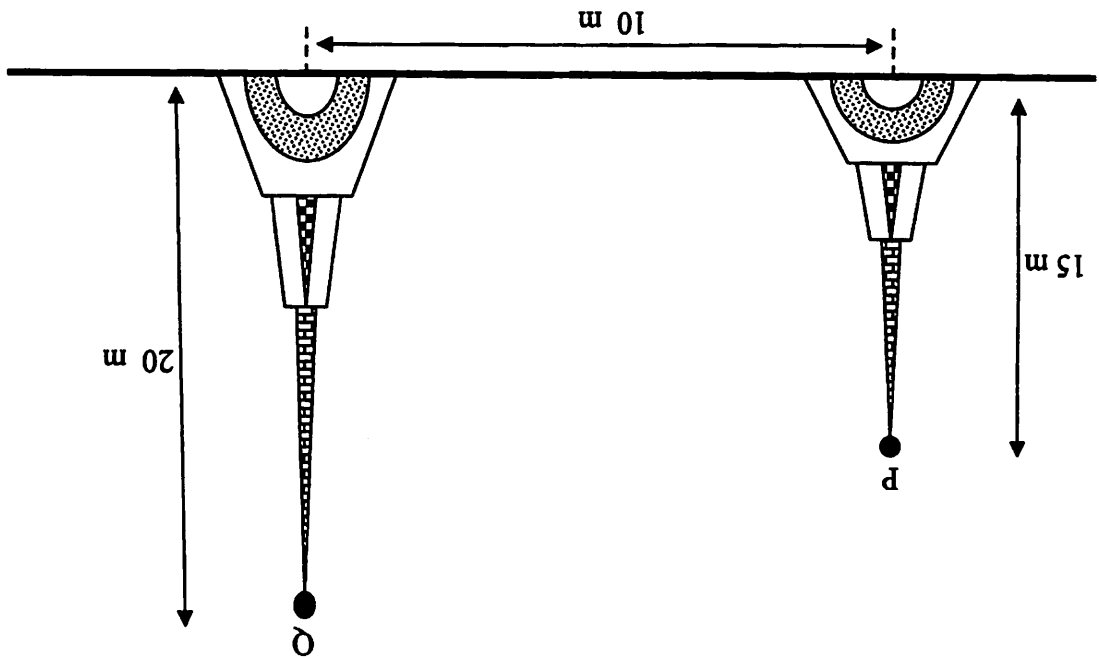
Namakan sudut di antara satah QRX dan satah $PQRS$?

- A $\angle YZX$
- B $\angle YXZ$
- C $\angle YQX$
- D $\angle YRX$

- A 26°34'
- B 63°26'
- C 53°08'
- D 36°52'

Calculate the angle of elevation of point Q from point P.
Hitung sudut dongakan titik Q dari titik P.

Diagram 20 / Rajah 20



Rajah 20 menunjukkan dua buah pencawang telekomunikasi di atas satu permukaan mengufuk. Titik P dan Q berada di puncak pencawang tersebut. Tinggi kedua-dua puncak pencawang tersebut masing-masing ialah 15 m dan 20 m.

Diagram 20 shows two telecommunication substations on horizontal plane. Point P and Q are the two tops of the substations. The height of the towers are 15 m and 20 m respectively.

20

- 21 Diagram 21 shows a flag pole RS . The points P , Q and R lie on a horizontal plane.

Rajah 21 menunjukkan satu tiang bendera RS . Titik-titik P , Q and R terletak di atas satah mengufuk.

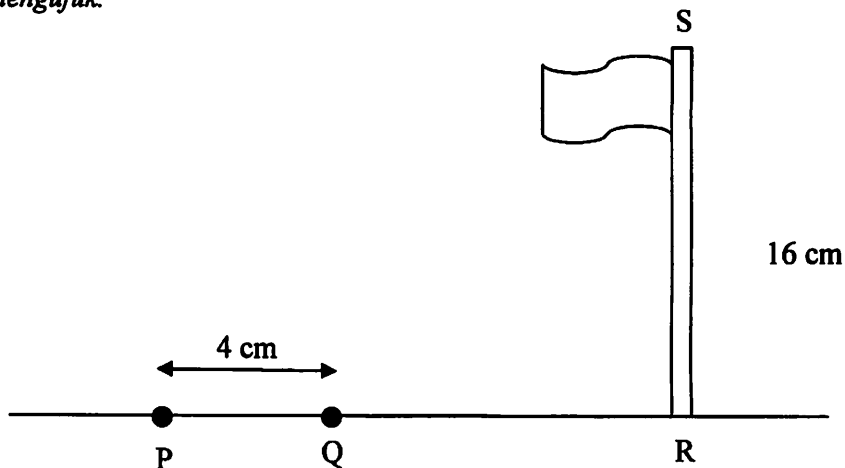


Diagram 21 / Rajah 21

The angle of depression Q from S is 50° .

Sudut tunduk Q dari titik S ialah 50° .

Calculate the distance PR .

Kira jarak PR .

- A 23.09
 B 19.07
 C 17.43
 D 13.43
- 22 $2e^2 + (e - 3h)(e + h) =$
- A $3e^2 - 2eh - 3h^2$
 B $3e^2 - 2eh + 3h^2$
 C $3e^2 + 2eh - 3h^2$
 D $3e^2 + 2eh + 3h^2$

- 23 Express $\frac{e}{3f} - \frac{e+5}{f}$ as a single fraction in its simplest form.

Ungkapkan $\frac{e}{3f} - \frac{e+5}{f}$ sebagai satu pecahan tunggal dalam bentuk termudah.

A $\frac{-2e+15}{3f}$

B $\frac{2e-15}{3f}$

C $\frac{-2e-15}{3f}$

D $\frac{2e+15}{3f}$

- 24 Given that $5q = \frac{2}{1+3p}$, express p in form of q.

Diberi $5q = \frac{2}{1+3p}$, ungkapkan p dalam sebutan q.

A $p = \frac{2+5q}{15q}$

B $p = \frac{2-5q}{15q}$

C $p = \frac{-2+5q}{15q}$

D $p = \frac{-2-5q}{15q}$

- 25 Given that $2t - 8 = 4(t - 5)$, then $t =$

Diberi $2t - 8 = 4(t - 5)$, maka $t =$

A -6

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

C 3

D 6

- 26 Given that $16^x = 64$, find the value of x .

Diberi $16^x = 64$, cari nilai x .

A -2

B $\frac{1}{2}$

C $\frac{3}{2}$

D 2

- 27 Simplify $\frac{m^3 \times (64n^3)^{\frac{1}{3}}}{(m^2n^4)^{\frac{1}{2}}}$.

Ringkaskan $\frac{m^3 \times (64n^3)^{\frac{1}{3}}}{(m^2n^4)^{\frac{1}{2}}}$.

A $\frac{4m^2}{n}$

B $\frac{4m^4}{n}$

C $\frac{8m^2}{n}$

D $\frac{8m^4}{n}$

- 28 Find the solution of $4x + 3 \geq 2x - 7$.

Cari penyelesaian bagi $4x + 3 \geq 2x - 7$

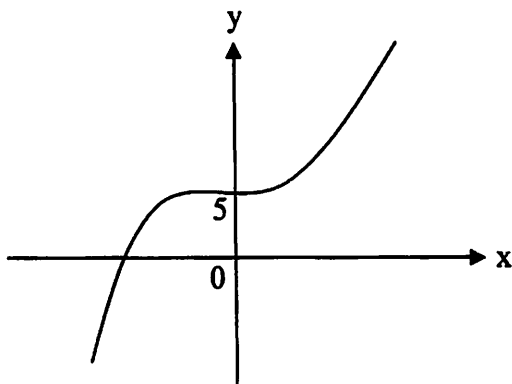
A $x \leq -5$

B $x \geq -5$

C $x \leq 5$

D $x \geq 5$

- 29 The Diagram shows the sketch of a function.
Rajah menunjukkan lakaran graf bagi suatu fungsi.



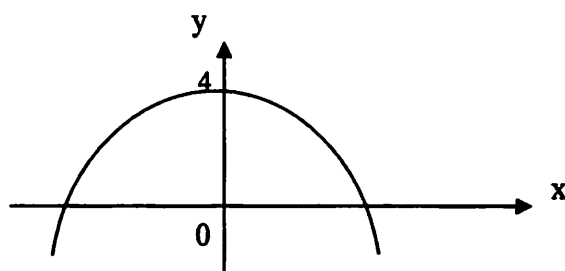
The possible equation of the function is
Persamaan yang mungkin bagi fungsi ialah

- A $y = -2x + 5$
 B $y = -2x - 5$
 C $y = 2x + 5$
 D $y = 2x - 5$
- 30 List all the integer x that satisfy both the inequalities $\frac{x}{3} + 4 \leq 5$ and $\frac{1}{2}(x - 5) < 2x$.
Senaraikan semua integer x yang memuaskan kedua-dua ketaksamaan $\frac{x}{3} + 4 \leq 5$ dan $\frac{1}{2}(x - 5) < 2x$.
- A $-2, -1, 0, 1, 2$
 B $-1, 0, 1, 2$
 C $-2, -1, 0, 1, 2, 3$
 D $-1, 0, 1, 2, 3$

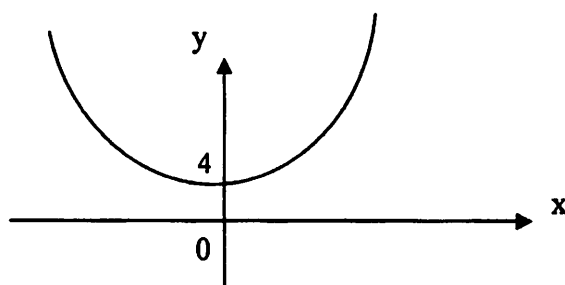
31 Which of the following graphs represents $y = x^2 - 4$.

Antara graf yang berikut yang manakah mewakili $y = x^2 - 4$.

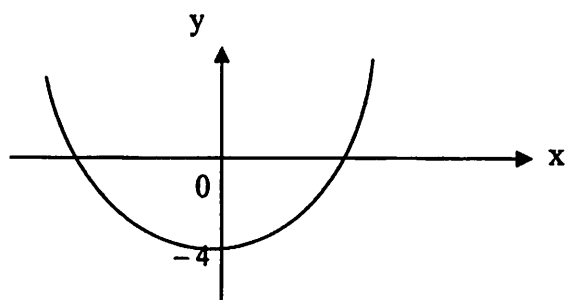
A



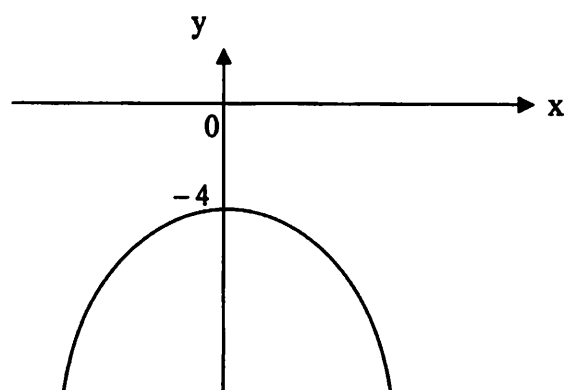
B



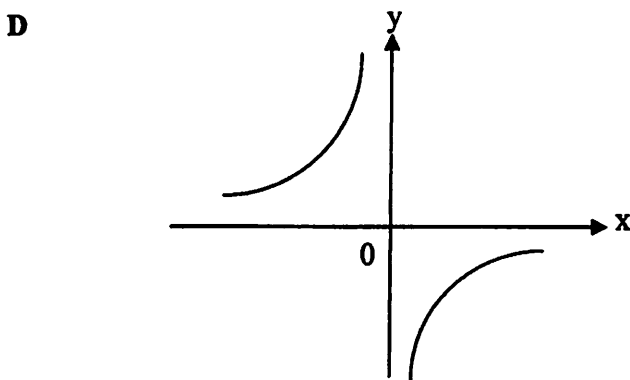
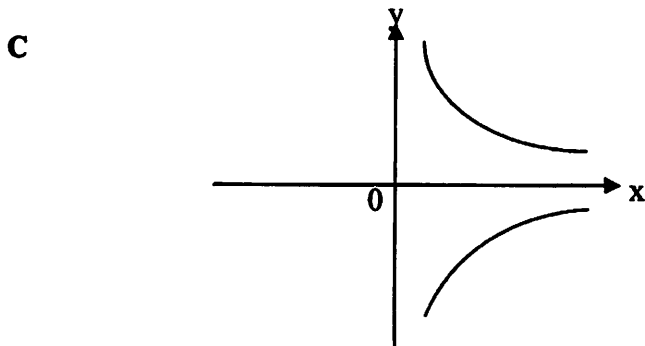
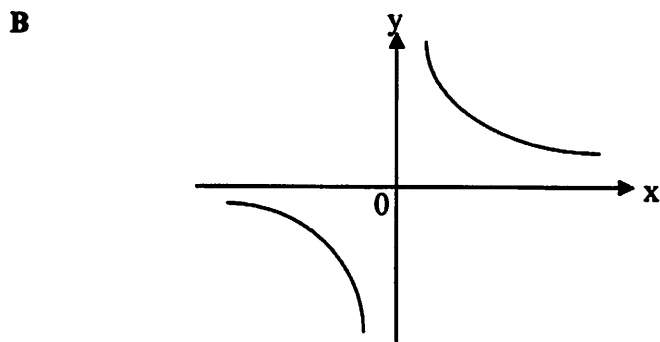
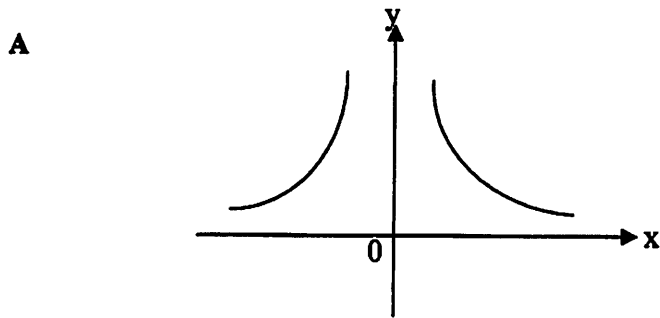
C



D



- 32 Which of the following graphs represents $y = -\frac{2}{x}$.
Antara graf yang berikut yang manakah mewakili $y = -\frac{2}{x}$.



- 33 Table shows the marks of 30 students in a test.

Jadual menunjukkan markah 30 orang pelajar dalam satu ujian.

Marks / <i>markah</i>	40 - 49	50 - 59	60 - 69	70 - 79	80 - 89
Frequency / <i>kekerapan</i>	6	4	3	10	7

The modal class is

Kelas mod ialah

- A 70 - 79
 B 60 - 69
 C 50 - 59
 D 40 - 49
- 34 Diagram 34 is a Venn diagram showing the universal set, ϵ , set P and set Q .
Rajah 34 ialah gambar rajah Venn yang menunjukkan set semesta, ϵ , set P dan set Q .

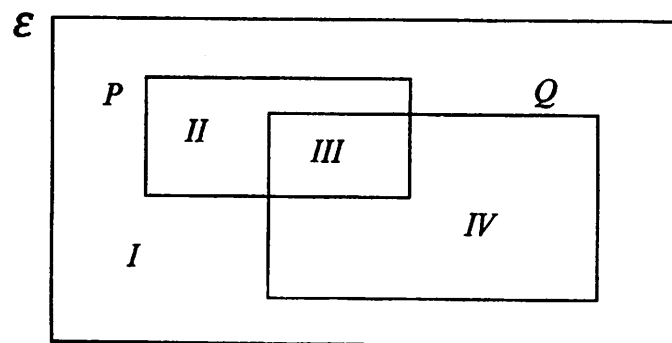


Diagram 34 / *Rajah 34*

Which regions represent the set Q' ?

Kawasan manakah mewakili set Q' ?

- A I
 B II
 C I, II
 D I, II, III

- 35 List all the subsets of set $M = \{a, b\}$
Senaraikan semua subset bagi set $M = \{a, b\}$

- A $\{a\}, \{b\}$
 B $\{ \}, \{a\}, \{b\}$
 C $\{a\}, \{b\}, \{a, b\}$
 D $\{ \}, \{a\}, \{b\}, \{a, b\}$

- 36 Diagram 36 is a Venn diagram showing the number of elements in set R , set S and set T .
Rajah 36 ialah gambar rajah Venn yang menunjukkan bilangan unsur dalam set R , set S dan set T .

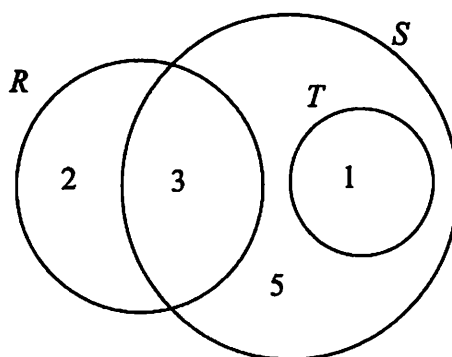


Diagram 36 / Rajah 36

It is given that the universal set, $\varepsilon = R \cup S \cup T$.

Find $n(R \cup T \cap S)$

Diberi bahawa set semesta $\varepsilon = R \cup S \cup T$.

Cari $n(R \cup T \cap S)$.

- A 2
 B 3
 C 4
 D 5

37 Find the gradient of straight line $x - \frac{4}{3}y + 2 = 0$.

Cari kecerunan bagi garis lurus $x - \frac{4}{3}y + 2 = 0$.

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

B $\frac{4}{3}$

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

D $\frac{3}{4}$

38 The graph in Diagram 38 shows a straight line KL with gradient -2 .

Graf dalam Rajah 38 menunjukkan garis lurus KL yang mempunyai kecerunan -2

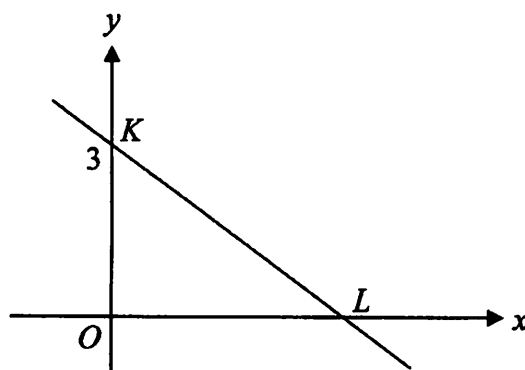


Diagram 38 / Rajah 38

Calculate the x -intercept of KL .

Hitungkan pintasan- x bagi KL .

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

B $\frac{1}{2}$

C $\frac{2}{3}$

D $\frac{3}{2}$

- 39 A box contains 12 cards in which three of them are red, four are blue and the rest are yellow in colour. A card is chosen at random from the box. What is the probability of getting a yellow card?

Sebuah kotak mengandung 12 keping kad, yang mana tiga daripadanya adalah merah, empat adalah biru dan selebihnya adalah berwarna kuning. Sekeping kad dipilih secara rawak daripada kotak itu. Apakah kebarangkalian sekeping kad kuning dipilih?

A $\frac{7}{12}$

B $\frac{5}{12}$

C $\frac{1}{3}$

D $\frac{1}{4}$

40

	School X <i>Sekolah X</i>	School Y <i>Sekolah Y</i>
Male teachers <i>Guru lelaki</i>	15	12
Female teachers <i>Guru perempuan</i>	12	21

Table 40 / Jadual 40

Table 40 shows the distribution of a group of 60 teachers teaching in two schools. A teacher is chosen at random from the group. What is the probability that a male teacher from school X is chosen.

Jadual 40 menunjukkan taburan sekumpulan 60 orang guru yang mengajar di dua buah sekolah. Seorang guru dipilih secara rawak daripada kumpulan itu. Apakah kebarangkalian bahawa seorang guru lelaki dari sekolah X terpilih.

- A $\frac{9}{20}$
- B $\frac{7}{20}$
- C $\frac{1}{4}$
- D $\frac{1}{5}$

KERTAS SOALAN TAMAT

**SKEMA PERMARKAHAN
UJIAN PENGESANAN TOV TAHUN 2012
SIJIL PELAJARAN MALAYSIA**

MATEMATIK KERTAS 1

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