

SULIT



**PROGRAM GEMPUR KECEMERLANGAN
SIJIL PELAJARAN MALAYSIA 2017
ANJURAN BERSAMA
MAJLIS PENGETUA SEKOLAH MALAYSIA
NEGERI PERLIS
DAN
MAJLIS GURU CEMERLANG NEGERI PERLIS**



SIJIL PELAJARAN MALAYSIA 2017

1449/1

MATEMATIK

Kertas 1

Ogos

$1\frac{1}{4}$ 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 sepadan dalam bahasa Melayu.*
- 3 *Calon dikehendaki membaca maklumat di halaman belakang kertas soalan ini.*

Kertas soalan ini mengandungi **28** 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

$$1 \quad a^m \times a^n = a^{m+n}$$

$$2 \quad a^m \div a^n = a^{m-n}$$

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

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

$$5 \quad \text{Distance / Jarak} \\ = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$6 \quad \text{Midpoint / Titik Tengah} \\ (x, y) = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

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

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

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

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

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

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

$$10 \quad \text{Pythagoras Theorem} \\ \text{Teorem Pithagoras} \\ c^2 = a^2 + b^2$$

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

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

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

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

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 = $\pi d = 2 \pi r$
- 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
Isi padu prisma tegak = luas keratan rentas \times panjang
- 7 Volume of cylinder = $\pi r^2 h$
Isi padu silinder = $\pi j^2 t$
- 8 Volume of cone = $\frac{1}{3} \pi r^2 h$
Isi padu kon = $\frac{1}{3} \pi j^2 t$
- 9 Volume of sphere = $\frac{4}{3} \pi r^3$
Isi padu sfera = $\frac{4}{3} \pi j^3$
- 10 Volume of right pyramid = $\frac{1}{3} \times \text{base area} \times \text{height}$
Isi padu pyramid tegak = $\frac{1}{3} \times \text{luas tapak} \times \text{tinggi}$
- 11 Sum of interior angles of a polygon
Hasil tambah sudut pedalaman polygon
 $= (n - 2) \times 180^\circ$

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

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

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

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

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

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

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

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

- 1 Given that the mass of an atom of plumbum is 3.44×10^{-25} kg. Find the mass, in g, 68 atoms.
Diberi bahawa jisim suatu atom plumbum ialah 3.44×10^{-25} kg. Cari jisim, dalam g, 68 atom.

- A 2.34×10^{14}
B 2.34×10^{18}
C 2.34×10^{-18}
D 2.34×10^{-20}

- 2 Round off 0.04895 correct to three significant figures.
Bundarkan 0.04895 betul kepada tiga angka bererti.

- A 0.05
B 0.050
C 0.0490
D 0.049

- 3 $3.6 \times 10^5 + 66000 =$

- A 4.26×10^5
B 4.26×10^9
C 1.02×10^5
D 1.02×10^9

- 4 It is given that the volume of a cylinder is 35000 cm^3 and the base area is 250 cm^2 . Calculate the height, in mm, of the cylinder.
Diberi bahawa isipadu sebuah silinder ialah 35000 cm^3 dan luas tapaknya ialah 250 cm^2 . Hitung tinggi, dalam mm, silinder itu.

- A 1.40×10^2
B 1.40×10^3
C 8.75×10^6
D 8.75×10^7

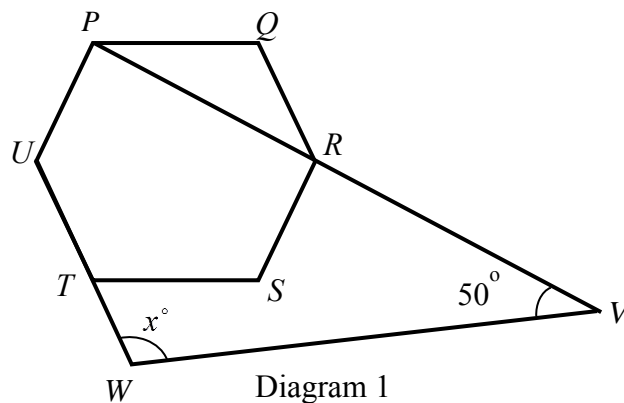
5 Express $5(5^3 + 5)$ as a number in base five.

Ungkapkan $5(5^3 + 5)$ sebagai satu nombor dalam asas lima.

- A 10001₅
- B 10010₅
- C 10100₅
- D 11000₅

6 In Diagram 1, $PQRSTU$ is a regular hexagon. PRV and UTW is a straight lines.

Dalam Rajah 1, $PQRSTU$ ialah heksagon sekata. PRV dan UTW ialah garis lurus.



Find the value of x
Cari nilai x

- A 90
- B 100
- C 120
- D 130

- 7 Diagram 2 shows a rhombus $PQRS$. RST is a straight line and $PS = PT$.
Rajah 2 menunjukkan sebuah rombus $PQRS$. RST ialah garis lurus dan $PS = PT$.

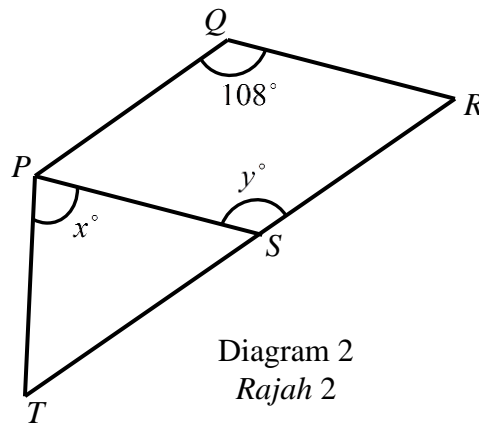


Diagram 2
Rajah 2

Find the value of $x + y$

Cari nilai $x + y$

- A 108°
 B 126°
 C 144°
 D 162°
- 8 Diagram 3 shows a circle with centre O and TPQ is a tangent of the circle at P . Given that SRQ is a straight line.
Rajah 3 menunjukkan sebuah bulatan berpusat pada titik O dan TPQ ialah tangen kepada bulatan di P . Diberi bahawa SRQ ialah garis lurus.

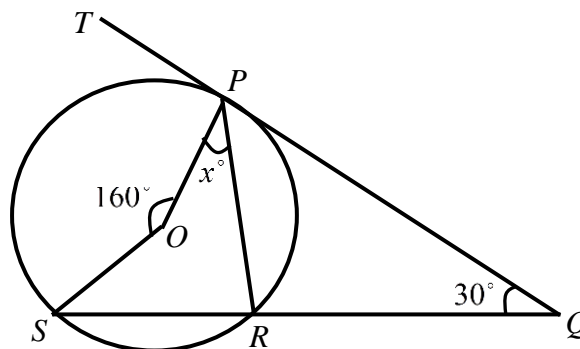


Diagram 3
Rajah 3

Find the value of x .

Cari nilai bagi x .

- A 20
 B 30
 C 40
 D 50

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- 9 Diagram 4 shows two triangles ABC and EDC , drawn on square grids.
Rajah 4 menunjukkan dua segi tiga ABC dan EDC , yang dilukis pada grid segi empat sama.

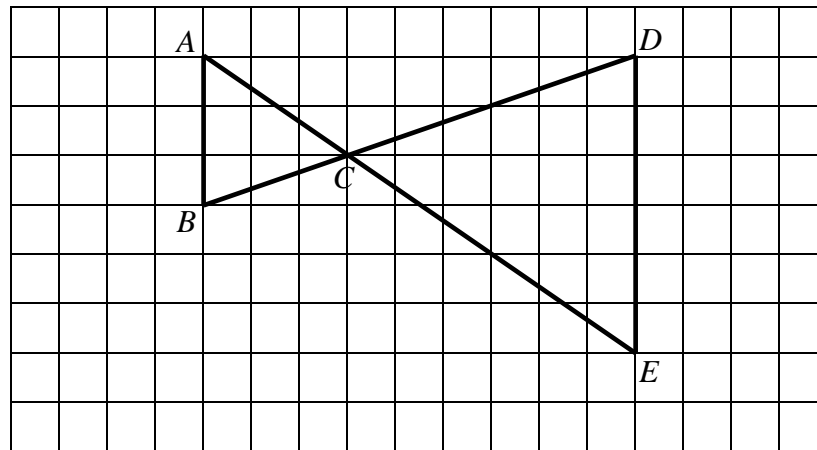


Diagram 4
Rajah 4

CDE is the image of ABC under an enlargement with centre C .

Find the scale factor of the enlargement.

CDE ialah imej kepada ABC di bawah pembesaran berpusatkan C .

Cari faktor skala pembesaran itu.

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

10 Diagram 5 shows two triangles, P and Q , drawn on square grid.

Rajah 5 menunjukkan dua segi tiga, P dan Q , yang dilukis pada grid segiempat sama.

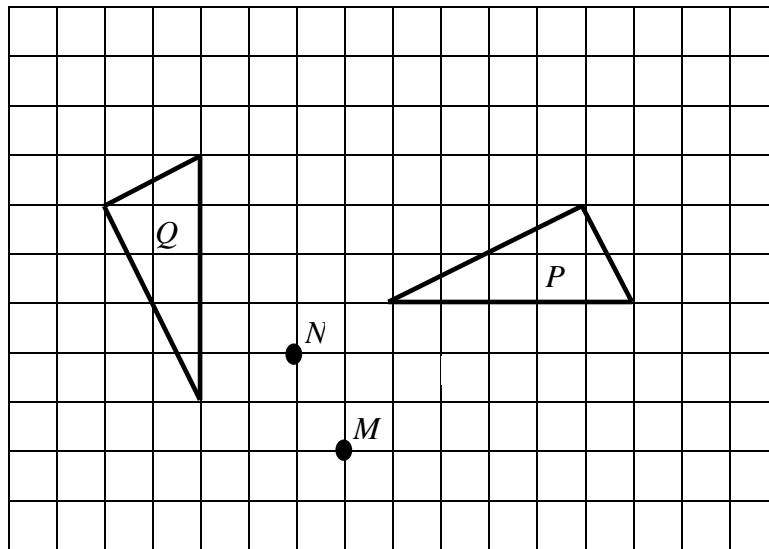


Diagram 5

Rajah 5

Q is the image of P under a rotation.

The angle, direction and centre of rotation are

Q ialah imej bagi P di bawah satu putaran.

Sudut, arah dan pusat putaran ialah

	Centre of rotation <i>Pusat Putaran</i>	Direction of rotation <i>Arah Putaran</i>	Angle of rotation <i>Sudut Putaran</i>
A	M	Clockwise <i>Arah Jam</i>	90°
B	M	Anticlockwise <i>Arah Lawan Jam</i>	90°
C	N	Clockwise <i>Arah Jam</i>	180°
D	N	Anticlockwise <i>Arah Lawan Jam</i>	180°

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- 11 In Diagram 6, QRS is a straight line.
Dalam Rajah 6, QRS ialah garis lurus.

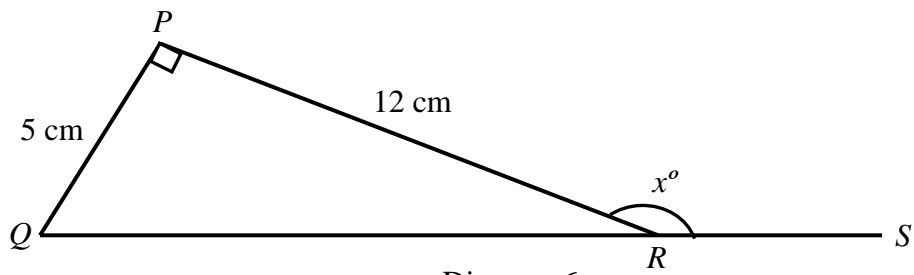


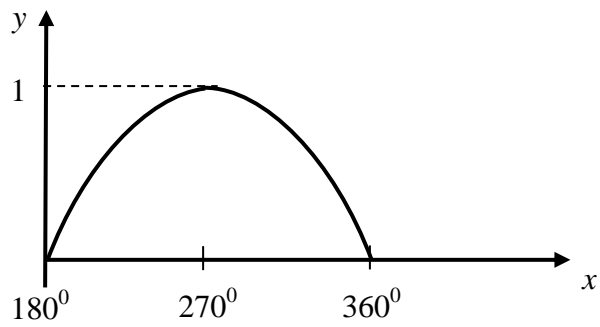
Diagram 6
Rajah 6

The value of $\cos x^\circ$ is
Nilai $\cos x^\circ$ ialah

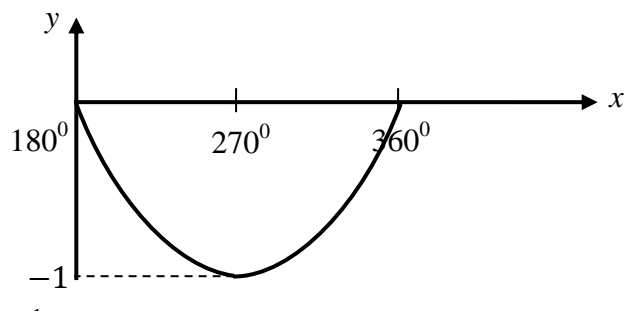
- A $-\frac{12}{13}$
B $-\frac{5}{13}$
C $\frac{5}{13}$
D $\frac{12}{13}$

- 12 Which of the following represents part of the graph of $y = \sin x$ for $180^\circ \leq x \leq 360^\circ$?
Graf yang manakah yang mewakili sebahagian daripada $y = \sin x$ for $180^\circ \leq x \leq 360^\circ$?

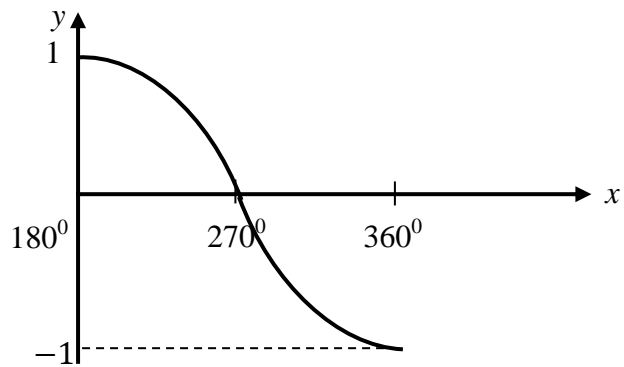
A



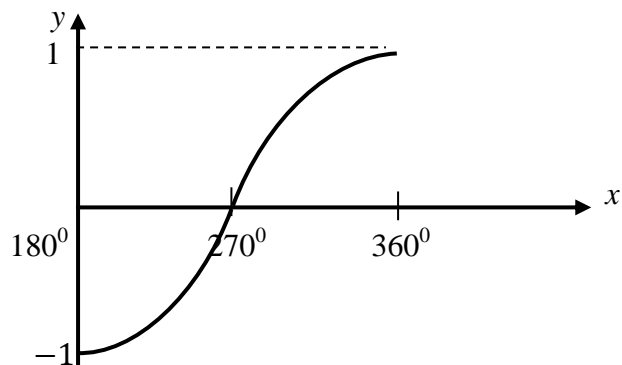
B



C



D



- 13 Diagram 7 shows a right pyramid with its rectangle base $QRST$.
Rajah 7 menunjukkan sebuah piramid tegak dengan tapak segi empat tepat $QRST$.

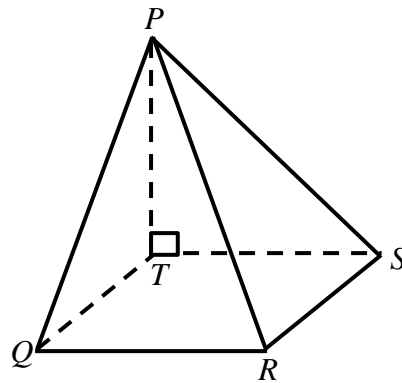


Diagram 7
Rajah 7

Vertex P is vertically above T .

Name the angle between the plane PTS and the plane PTQ .

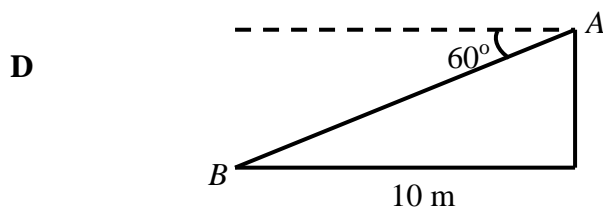
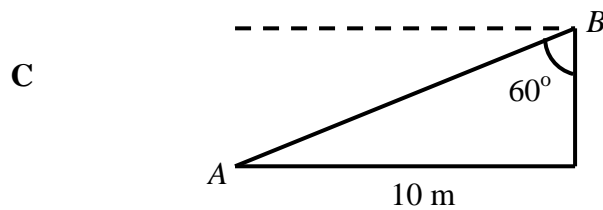
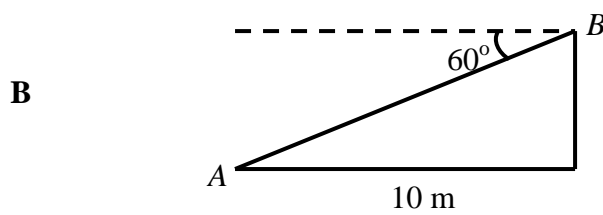
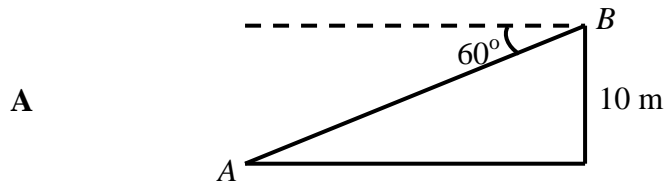
Puncak P berada tegak di atas T .

Namakan sudut di antara satah PTS dan satah PTQ .

- A $\angle PQT$
- B $\angle PST$
- C $\angle SPQ$
- D $\angle STQ$

- 14** It is given that the angle of elevation of B from A is 60° . The horizontal distance between point A and B is 10 m. Which of the following diagram represents the angle of depression angle of point A from point B ?

Diberi bahawa sudut dongak B dari A ialah 60° . Jarak mengufuk antara titik A dan B ialah 10 m. Antara rajah berikut, manakah yang mewakili sudut tunduk A dari B ?



- 15** Diagram 8 show Ahmad stands 50m away from the tower on the horizontal ground, the angle of elevation of the peak of the tower from Ahmad is 70° . Find the height, in meter , of the tower.

Rajah 8 menunjukkan Ahmad berdiri 50 m daripada sebuah menara di atas tanah mengufuk. sudut dongakan puncak menara dari Ahmad ialah 70° . Hitung tinggi dalam meter menara itu.

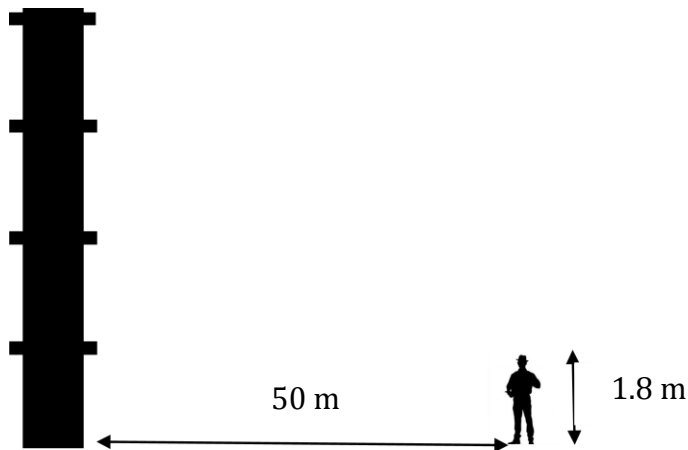


Diagram 8
Rajah 8

- A** 20.00
B 48.78
C 137.37
D 139.17
- 16** Diagram 9 shows the position of X and Y. Find the bearing of X from Y.
Rajah 9 menunjukkan kedudukan X dan Y. Cari bearing X dari Y.

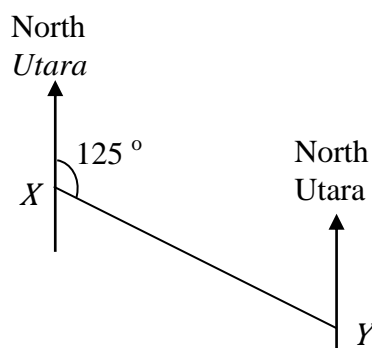


Diagram 9
Rajah 9

- A** 055°
B 125°
C 235°
D 305°

- 17** In Diagram 10, N is the North Pole, S is the South Pole, NOS is the axis of the earth and PR is a diameter of the parallel of latitude.
 Dalam Rajah 10, U ialah Kutub Utara, S ialah Kutub Selatan, UOS ialah paksi bumi dan PR ialah diameter satu selarian latitud.

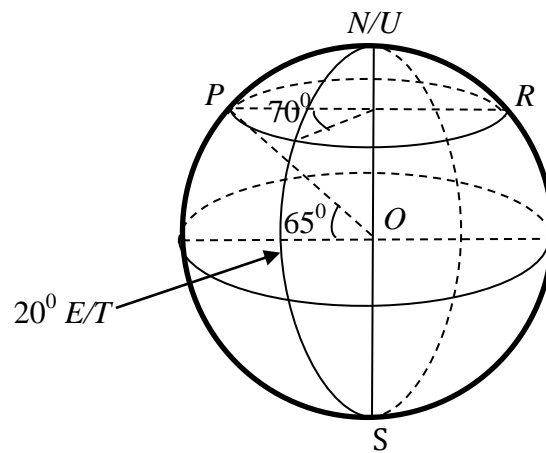


Diagram 10
Rajah 10

Find the position of P .

Cari kedudukan bagi P .

- A** (25 ° N, 70 ° W)
(25 ° U, 70 ° B)
- B** (65 ° N, 50 ° W)
(65 ° U, 50 ° B)
- C** (65 ° N, 70 ° W)
(65 ° U, 70 ° B)
- D** (25 ° N, 50 ° W)
(25 ° U, 50 ° B)
- 18** $5x(x + y) - 2(3x - y)^2$
- A** $-13x^2 + 5xy - 2y^2$
- B** $-13x^2 + 7xy - 2y^2$
- C** $-23x^2 - 7xy + 2y^2$
- D** $-13x^2 + 17xy - 2y^2$

- 19 Given $y = 4x^2y - 2$, express x in terms of y
 Diberi $y = 4x^2y - 2$, ungkapkan x dalam sebutan y

A $x = \sqrt{\frac{y-2}{2y}}$

B $x = \sqrt{\frac{y-2}{4y}}$

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

D $x = \sqrt{\frac{y+2}{4y}}$

- 20 Express $\frac{4x^2 + 8y}{x^2 - 16} \div \frac{8x}{x - 4}$ as a single fraction in the simplest form

Ungkapkan $\frac{4x^2 + 8y}{x^2 - 16} \div \frac{8x}{x - 4}$ sebagai suatu pecahan tunggal dalam bentuk termudah

A $\frac{x + 2y}{x - 4}$

B $\frac{x^2 + 2y}{2x(x + 4)}$

C $\frac{x + 2y}{x + 4}$

D $\frac{x + 4}{x + 2y}$

- 21 Given $k - 3 = \frac{5(3 - k)}{2}$, then $k =$

Diberi $k - 3 = \frac{5(3 - k)}{2}$, maka $k =$

A -3

B $-\frac{11}{3}$

C 3

D $\frac{11}{3}$

22 $\sqrt[3]{\left(\frac{4}{5}\right)^{-7}}$

A $\left(\frac{4}{5}\right)^{-\frac{3}{4}}$

B $\left(\frac{4}{5}\right)^{\frac{7}{3}}$

C $\left(\frac{5}{4}\right)^{\frac{7}{3}}$

D $\left(\frac{5}{4}\right)^{-\frac{7}{3}}$

23

Simplify $\frac{p^5 \times (125q^6)^{\frac{1}{3}}}{(p^4q^{12})^{\frac{1}{4}}}$

Permudahkan $\frac{p^5 \times (125q^6)^{\frac{1}{3}}}{(p^4q^{12})^{\frac{1}{4}}}$

A $\frac{5p^4}{q}$

B $\frac{25p^4}{q}$

C $\frac{5q}{q^6}$

D $\frac{125q}{q^6}$

24 Find the solution for $4 - 2y \geq 12$

Cari penyelesaian bagi $4 - 2y \geq 12$

A $y \geq -4$

B $y \geq 4$

C $y \leq -4$



D $y \leq -8$

25

List all the integers x which satisfy both the linear inequalities $\frac{1}{3}x < 3$ and $7 - 2x \leq 3$.

Senaraikan semua integer x yang memuaskan kedua-dua ketaksamaan $\frac{1}{3}x < 3$ dan $7 - 2x \leq 3$.

- A 5, 6, 7, 8
- B 3, 4, 5, 6, 7, 8
- C 3, 4, 5, 6, 7, 8, 9
- D 2, 3, 4, 5, 6, 7, 8
- 26 Diagram 11 is a pictogram which shows the sales of pineapples on Monday, Tuesday, Wednesday and Thursday. The sales for Tuesday and Thursday are not shown.
Rajah 11 ialah piktogram yang menunjukkan jualan buah nanas pada hari Isnin, Selasa, Rabu dan Khamis. Jualan pada hari Selasa dan Khamis tidak dinyatakan.

Monday <i>Isnin</i>	
Tuesday <i>Selasa</i>	
Wednesday <i>Rabu</i>	
Thursday <i>Khamis</i>	



Represents 20 pineapples
Mewakili 20 nanas

Diagram 11
Rajah 11

Sales of pineapples on Monday, Tuesday, Wednesday and Thursday in the ratio 4 : 7 : 6 : 5. Find the total number of pineapples sold in four days.

Jualan nanas pada hari Isnin, Selasa, Rabu, Khamis adalah dalam nisbah 4 : 7 : 6 : 5. Cari jumlah nanas yang dijual dalam tempoh empat hari tersebut.

- A 200
- B 400
- C 420
- D 440

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- 27** Diagram 12 is a pie chart which shows combined results of a test taken by two groups of student. Table 1 shows the results of the groups which are not complete.
Rajah 12 ialah carta pai yang menunjukkan gabungan keputusan suatu ujian bagi dua kumpulan murid. Jadual 1 menunjukkan keputusan ujian itu mengikut kumpulan, tetapi belum dilengkapkan.

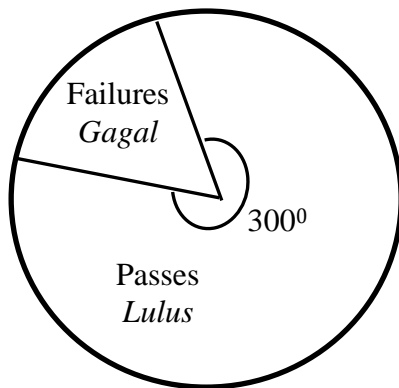


Diagram 12
Rajah 12

Group <i>Kumpulan</i>	Results <i>Keputusan</i>	
	Passes <i>Lulus</i>	Failures <i>Gagal</i>
A	190	60
B		
Total <i>Jumlah</i>	330	

Table 1
Jadual 1

Calculate the number of students from group B who failed the test.
Hitung bilangan murid dari kumpulan B yang gagal ujian itu.

- A 6
- B 60
- C 66
- D 140

- 28 Diagram 13 shows the sketching of a graph function .
Rajah 13 menunjukkan lakaran satu graf fungsi.

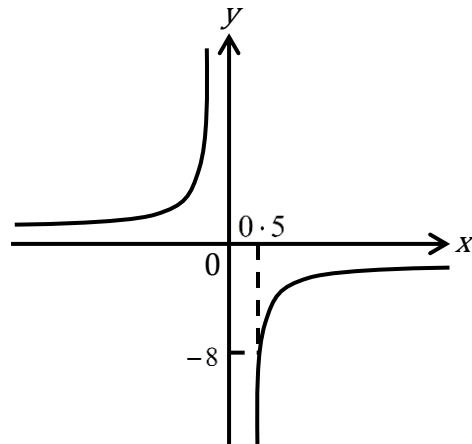


Diagram 13

Rajah 13

The equation of the graph function is
Persamaan bagi graf fungsi tersebut ialah

- A $y = \frac{4}{x}$
 B $y = -\frac{4}{x}$
 C $y = \frac{16}{x}$
 D $y = -\frac{16}{x}$
- 29 Diagram 14 is a Venn diagram with the universal set, $\xi = J \cup K \cup L$
Rajah 14 menunjukkan gambar rajah Venn dengan set semesta, $\xi = J \cup K \cup L$

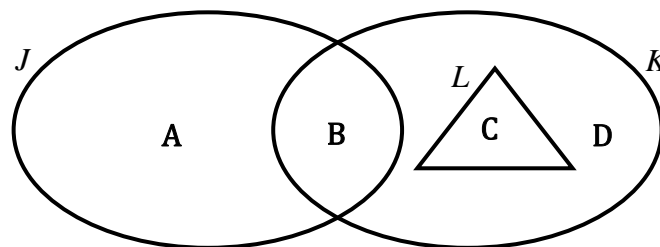


Diagram 14

Rajah 14

Which of the region A, B, C and D represents $J \cap (K' \cup L)$?
Antara kawasan A, B, C, dan D, yang manakah mewakili $J \cap (K' \cup L)$?

- 30** Diagram 15 below is a Venn diagram showing the number of students who like to play hockey and tennis. Given that the universal set, $\xi = H \cup T$, set $H = \{ \text{students who like to play hockey} \}$ and $T = \{ \text{students who like to play tennis} \}$.
Rajah 15 di bawah ialah gambar rajah Venn yang menunjukkan bilangan murid yang suka bermain hoki dan tenis. Diberi bahawa set semesta, $\xi = H \cup T$, set $H = \{ \text{murid yang suka bermain hoki} \}$ dan set $T = \{ \text{murid yang suka bermain tenis} \}$.

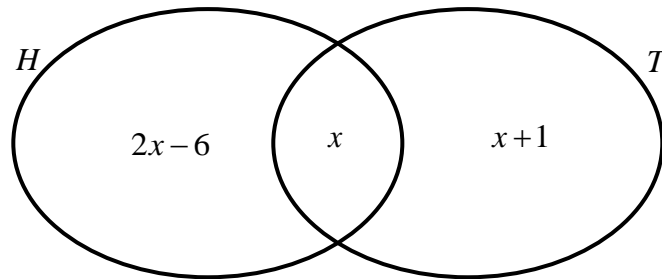


Diagram 15

Rajah 15

If the number of students who like to play one game only is 19, find the total number of students.

Jika bilangan murid yang suka satu jenis permainan sahaja ialah 19 orang, cari jumlah semua murid.

- A 19
- B 27
- C 47
- D 99

- 31** The diagram 16 below shows a straight line MR drawn on a Cartesian plane.
Rajah 16 di bawah menunjukkan garis lurus MR dilukis pada suatu satah Cartes.

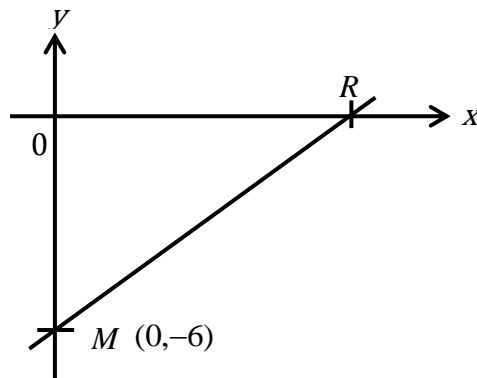


Diagram 16

Rajah 16

Given that the length of MR is 10 units, find the gradient of MR .
Diberi bahawa panjang MR ialah 10 unit, cari kecerunan MR .

- A** $\frac{3}{4}$
- B** $-\frac{4}{3}$
- C** $\frac{4}{5}$
- D** $-\frac{5}{4}$
- 32** A straight line passes through the points $(0, 5)$ and $(10, 10)$. Find the x -intercept of the straight line.
Satu garis lurus melalui titik $(0, 5)$ and $(10, 10)$. Cari pintasan- x bagi garis lurus itu.
- A** -10
- B** -5
- C** 5
- D** 10

- 33 Diagram 17 shows two straight lines DE and EF on a Cartesian plane.
Rajah 17 menunjukkan dua garis lurus DE dan EF di atas suatu satah Cartes.

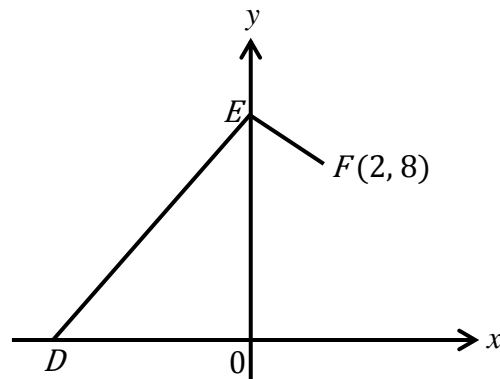


Diagram 17

Rajah 17

The distance and the x -intercept of DE is 15 units and -9 respectively. Find the gradient of EF .

Jarak dan pintasan- x bagi DE masing-masing ialah 15 unit dan -9 . Cari kecerunan EF .

- A 2
 B 1
 C -1
 D -2
- 34 A box contains 10 apples, 8 mangoes and x oranges. A fruit is chosen at random from the box and the probability of getting an orange is $\frac{1}{4}$. Find the probability that the chosen fruit is **not** an apple.
*Sebuah kotak mengandungi 10 biji epal, 8 biji mangga dan x biji oren. Sebiji buah dipilih secara rawak daripada kotak itu dan kebarangkalian bahawa buah oren terpilih ialah $\frac{1}{4}$. Cari kebarangkalian bahawa **bukan** buah epal terpilih.*

- A $\frac{1}{2}$
 B $\frac{2}{3}$
 C $\frac{5}{12}$
 D $\frac{7}{12}$

[Lihat halaman sebelah
 SULIT

- 35** There are 60 students in a hall. 20 of them are male. 15 female students leave the hall. A student is chosen at random from the group, calculate the probability that the student is a female.

Terdapat 60 orang pelajar di dalam sebuah dewan. 20 orang daripada mereka ialah pelajar lelaki. 15 orang pelajar perempuan keluar dari dewan itu. Seorang pelajar dipilih secara rawak daripada kumpulan itu, hitung kebarangkalian bahawa pelajar itu ialah perempuan.

A $\frac{1}{3}$

B $\frac{5}{12}$

C $\frac{5}{9}$

D $\frac{5}{8}$

- 36** A group of volunteers has 30 women and a number of men members. A volunteer is chosen at random from the group. The probability of choosing a women is $\frac{3}{5}$. Find the number of men in the group.

Sekumpulan sukarelawan terdiri daripada 30 orang wanita dan beberapa orang lelaki. Seorang sukarelawan dipilih secara rawak daripada kumpulan itu.

Kebarangkalian memilih seorang ahli wanita ialah $\frac{3}{5}$. Cari bilangan lelaki dalam kumpulan itu.

A 12

B 18

C 20

D 50

- 37 Which of the following tables represent $T = 2r^3$?
Antara berikut, jadual manakah mewakili $T = 2r^3$?

A

r	1	2	5
T	1	9	115

B

r	2	3	7
T	9	18	98

C

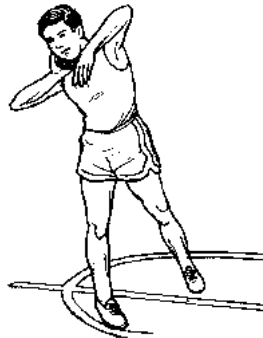
r	2	3	5
T	12	27	75

D

r	1	3	5
T	2	54	250

- 38** The weight, W kg, of a spherical shot put ball varies directly to the cube of its radius and the diameter is 9 cm when the weight is 4 kg.

Berat, W kg, sebiji bola lontar peluru berbentuk sfera berubah secara langsung dengan kuasa tiga jejaringnya dan diameternya 9 cm apabila beratnya ialah 4 kg.



Find the weight in kg, of the shot put ball if the diameter is 10 cm.

Cari berat dalam kg, bola lontar peluru itu jika diameternya ialah 10 cm

- A** 4.14
- B** 4.23
- C** 4.95
- D** 5.49
- 39** $N + \begin{pmatrix} -1 & 0 \\ 4 & 3 \end{pmatrix} = \begin{pmatrix} 7 & -10 \\ 4 & 0 \end{pmatrix}$

Find matrix N .

Cari matriks N

- A** $\begin{pmatrix} 8 & -10 \\ 0 & -3 \end{pmatrix}$
- B** $\begin{pmatrix} 6 & -10 \\ -8 & -3 \end{pmatrix}$
- C** $\begin{pmatrix} 8 & 0 \\ 0 & 3 \end{pmatrix}$
- D** $\begin{pmatrix} 6 & 0 \\ -8 & 3 \end{pmatrix}$

- 40** Find the value of k such that
Cari nilai k supaya

$$\begin{pmatrix} 8 & 5 \\ -7 & 0 \end{pmatrix} + \frac{1}{2} \begin{pmatrix} 6 & k \\ 12 & 2 \end{pmatrix} = \begin{pmatrix} 11 & 3 \\ -1 & 1 \end{pmatrix}$$

- A** -16
B -4
C 4
D 16

END OF QUESTION PAPER
KERTAS SOALAN TAMAT

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 baharu.
6. The diagram in the questions provided are not drawn to scale unless stated.
Rajah yang mengiringi soalan tidak dilukis megikut skala kecuali dinyatakan.
7. A list of formulae is provided on page 2 to 4.
Satu senarai rumus disediakan di halaman 2 hingga 4.
8. You may use a scientific calculator.
Anda dibenarkan menggunakan kalkulator saintifik.