

SULIT



JABATAN PELAJARAN NEGERI TERENGGANU

**PEPERIKSAAN AKHIR TAHUN
TINGKATAN EMPAT 2010
MATHEMATICS**

1449/1

**Kertas 1
Oktober/November
2010**

$1\frac{1}{4}$ 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.*

Disediakan oleh:
AKRAM NEGERI TERENGGANU

Dibiayai oleh:
KERAJAAN NEGERI TERENGGANU

TERENGGANU ANJUNG ILMU

Dicetak oleh:
Percetakan Yayasan Islam Terengganu Sdn. Bhd.
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Kertas soalan ini mengandungi 28 halaman bercetak

1449/1

**[Lihat halaman sebelah
SULIT**

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 = $\pi d = 2\pi r$
- 3 Area of circle = πr^2
Luas bulatan = πr^2
- 4 Curved surface area of cylinder = $2\pi rh$
Luas permukaan melengkung silinder = $2\pi r h$
- 5 Surface area of sphere = $4\pi r^2$
Luas permukaan sfera = $4\pi r^2$
- 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 = $\pi r^2 h$
- 8 Volume of cone = $\frac{1}{3} \pi r^2 h$
Isipadu kon = $\frac{1}{3} \pi r^2 h$
- 9 Volume of sphere = $\frac{4}{3} \pi r^3$
Isipadu sfera = $\frac{4}{3} \pi r^3$
- 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
 $= (n - 2) \times 180^\circ$

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

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

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

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

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

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

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

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

- 1 Round off 0.0076354 correct to three significant figure.
Bundarkan 0.0076354 betul kepada tiga angka bererti.
- A 0.007
B 0.008
C 0.00763
D 0.00764
- 2 Round off 954 630 correct to three significant figure.
Bundarkan 954 630 betul kepada tiga angka bererti.
- A 954
B 955
C 955000
D 954000
- 3 Express 0.00000678 in standard form.
Ungkapkan 0.00000678 dalam bentuk piawai.
- A 6.78×10^{-6}
B 6.78×10^{-5}
C 6.78×10^5
D 6.78×10^6
- 4 Express 2.05×10^4 in a single number correct to three significant figures.
Ungkapkan 2.05×10^4 dalam satu nombor tunggal betul kepada tiga angka bererti.
- A 205
B 206
C 20500
D 20600

5 $3.56 \times 10^5 + 76000 =$

- A 1.12×10^{-5}
- B 4.32×10^{-5}
- C 4.32×10^5
- D 1.12×10^5

- 6 In Diagram 1, $EFGH$ is a rhombus, FHJ and FGL are straight lines.
 Dalam Rajah 1, $EFGH$ ialah sebuah rombus, FHJ dan FGL ialah garis lurus

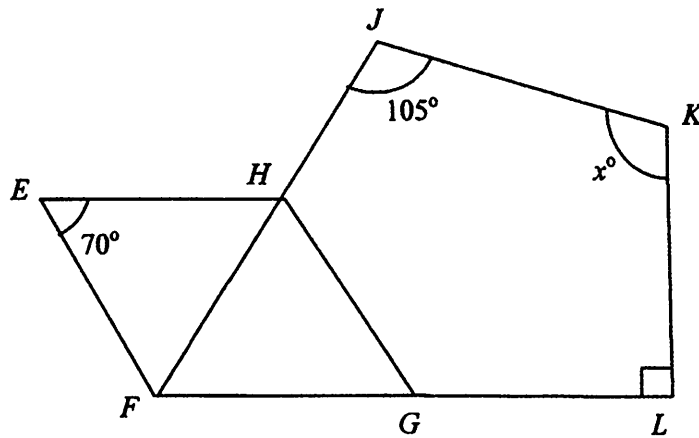


Diagram 1 / Rajah 1

Find the value of x .
 Cari nilai x .

- A 100
- B 105
- C 108
- D 110

- 7 In Diagram 2, $PQRST$ is a pentagon.
Rajah 2, $PQRST$ ialah sebuah pentagon.

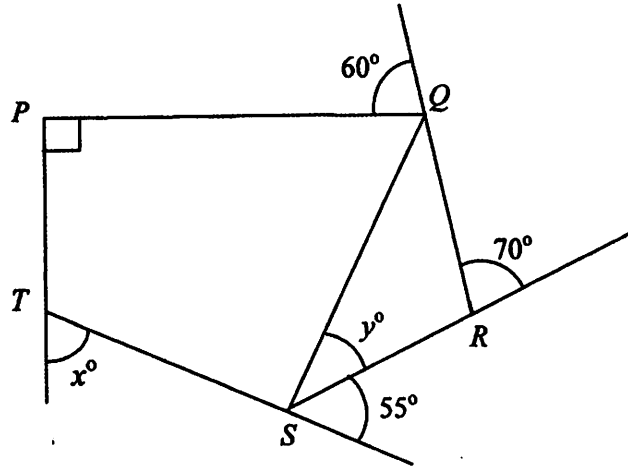


Diagram 2 / Rajah 2

$QR = RS$, calculate the value of $x + y$.
 $QR = RS$, hitung nilai $x + y$.

- A 125
- B 120
- C 115
- D 110

- 8 In Diagram 3, TPU is a tangent of circle RPQ at P . Given RQ is parallel to TU and PQS is a straight line.
 Dalam Rajah 3, TPU ialah tangen kepada bulatan RPQ di P . Diberi RQ selari dengan TU dan PQS ialah garis lurus.

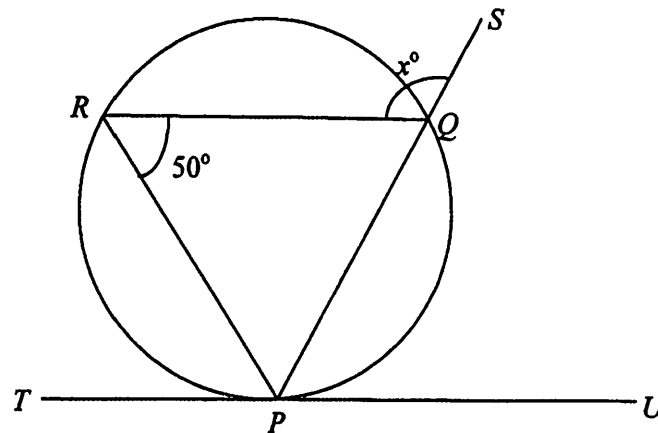


Diagram 3 / Rajah 3

Find the value of x .
 Cari nilai x .

- A 130
- B 120
- C 110
- D 100

- 9 In Diagram 4, rectangle K is the image of rectangle J under rotation through 90° in clockwise direction.

Dalam Rajah 4, segiempat tepat K adalah imej bagi segiempat tepat J di bawah putaran 90° mengikut arah jam.

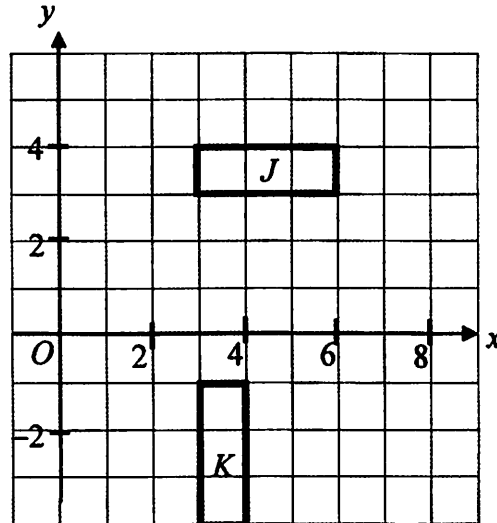


Diagram 4 / Rajah 4

State the centre of rotation

Nyatakan pusat putaran

- A (0, 0)
- B (1, 0)
- C (1, 1)
- D (5, 1)

- 12 Diagram 7 shows a unit circle with the centre O .
Rajah 7 menunjukkan sebuah bulatan unit berpusat O .

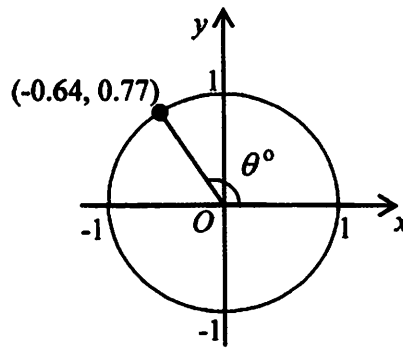
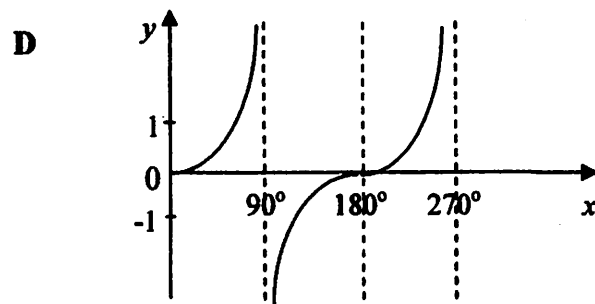
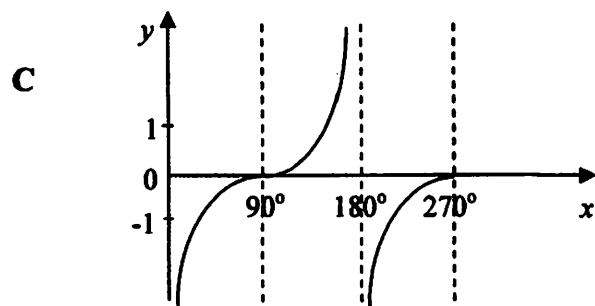
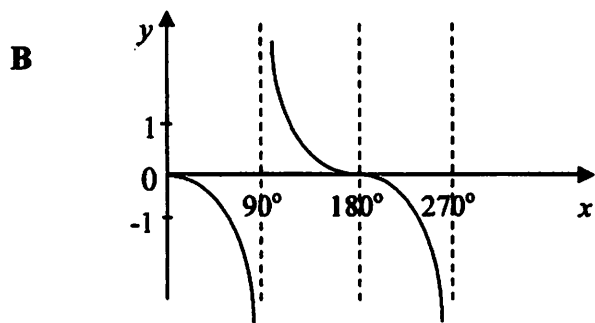
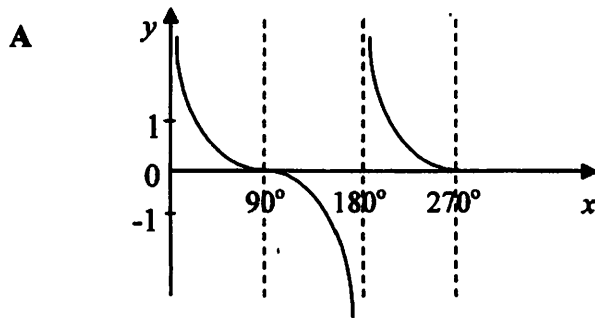


Diagram 7 / Rajah 7

The value of $\cos \theta^\circ$ is
Nilai bagi kos θ° ialah

- A 0.77
- B 0.64
- C -0.64
- D -0.83

- 13 Which of the graph represents $y = \tan x^\circ$, for $0^\circ \leq x \leq 270^\circ$?
 Graf manakah mewakili $y = \tan x^\circ$ bagi $0^\circ \leq x \leq 270^\circ$?



- 14 Given that $h = \frac{m+2}{3m}$, express m in terms of h .

Diberi bahawa $h = \frac{m+2}{3m}$, ungkapkan m dalam sebutan h .

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

- 15 In Diagram 8, point E and F are on flat ground, 34 m apart. GE is a pole built vertically on E .

Dalam Rajah 8, titik E dan F berada di atas tanah mengufuk, berjarak 34 m di antaranya. GE adalah sebatang tiang yang didirikan tegak di atas E .

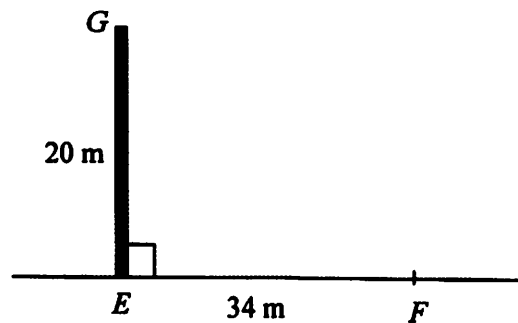


Diagram 8 / Rajah 8

State the angle of elevation of the tower G from the point F .
Nyatakan sudut dongak puncak menara G dari titik F .

- A $30^\circ 28'$
 B $36^\circ 2'$
 C $53^\circ 58'$
 D $59^\circ 32'$

- 16 In Diagram 9, $\angle LMN$ is a right angle. If $\sin x^\circ = 0.5$, find the length of LN
 Dalam Rajah 9, $\angle LMN$ ialah suatu sudut tepat. Jika $\sin x^\circ = 0.5$, cari panjang LN

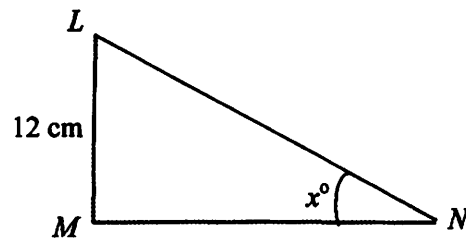


Diagram 9 / Rajah 9

- A 12 cm
 B 24 cm
 C 27 cm
 D 28 cm
- 17 $(4h+3)(3h-5) =$
- A $12h^2 - 29h + 15$
 B $12h^2 - h - 15$
 C $12h^2 - 11h - 15$
 D $12h^2 + 29h - 15$
- 18 $(3p+m)(p-2m) - 2p^2 =$
- A $3p^2 + 5mp - 2m^2$
 B $3p^2 - 5mp + 2m^2$
 C $p^2 + 5mp + 2m^2$
 D $p^2 - 5mp - 2m^2$

19 Simplify / Ringkaskan $5ab + 4b^2 - (a - 2b)^2$

- A $ab - b^2$
- B $ab + b^2$
- C $9ab - a^2$
- D $9ab + b^2$

20 If $\frac{mn}{a} = m + b$, then $m =$

Jika $\frac{mn}{a} = m + b$, maka $m =$

- A $\frac{ab}{n - a}$
- B $\frac{b}{n + a}$
- C $\frac{ab}{n + a}$
- D $\frac{b}{n - a}$

21 Express $\frac{2}{5y} - \frac{y+20}{15y^2}$ as a single fraction in its simplest form

Ungkapkan $\frac{2}{5y} - \frac{y+20}{15y^2}$ sebagai satu pecahan tunggal dalam bentuk termudah.

- A $\frac{7y+20}{15y^2}$
- B $\frac{7y-20}{15y^2}$
- C $\frac{y-4}{3y^2}$
- D $\frac{y+4}{3y^2}$

- 22 Given that $8 - 3(k - 4) = 2k$, find the value of k

Diberi $8 - 3(k - 4) = 2k$, cari nilai k

A -4

B $-\frac{4}{5}$

C $\frac{5}{4}$

D 4

- 23 Find the value of $\left(2^{\frac{1}{4}} \times 3^{\frac{3}{4}}\right)^4 \div (2^2 \times 3^4)$

Cari nilai bagi $\left(2^{\frac{1}{4}} \times 3^{\frac{3}{4}}\right)^4 \div (2^2 \times 3^4)$

A $\frac{1}{9}$

B $\frac{1}{6}$

C 6

D 9

- 24 Simplify $me^3 \times (m^2e^{-1})^4$

Ringkaskan $me^3 \times (m^2e^{-1})^4$

A $\frac{m^9}{e}$

B $\frac{m^7}{e}$

C $\frac{m^9}{e^7}$

D $\frac{m^7}{e^{11}}$

- 25 List out all the integers that satisfy both inequalities, $3 - t < 5$ and $\frac{t}{2} + 3 \leq 4$

Senaraikan semua integer yang memuaskan kedua-dua ketaksamaan,

$$3 - t < 5 \text{ dan } \frac{t}{2} + 3 \leq 4$$

- A -1, 0, 1
 B -1, 0, 1, 2
 C -2, -1, 0, 1
 D -2, -1, 0, 1, 2
- 26 In Diagram 10, the pie chart represents a total of 720 students of Form 3, Form 4 and Form 5 in a school.
Dalam Rajah 10, carta pai mewakili 720 orang pelajar daripada Tingkatan 3, Tingkatan 4 dan Tingkatan 5 di sebuah sekolah.

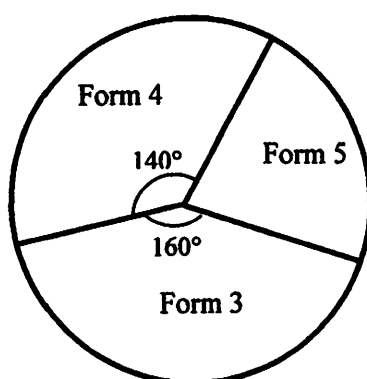


Diagram 10 / Rajah 10

Find the total of Form 5 students.
Cari jumlah pelajar Tingkatan 5.

- A 110
 B 120
 C 130
 D 140

- 27 Table 1 shows the cumulative frequency table for the height of 60 students.
Jadual 1 menunjukkan jadual kekerapan longgokan bagi tinggi 60 orang pelajar.

Height (cm) Tinggi (cm)	Cumulative Frequency Kekerapan Longgokan
136 – 140	4
141 – 145	11
146 – 150	20
151 – 155	32
156 – 160	45
161 – 165	56
166 – 170	60

Table 1 / *Jadual 1*

What is the modal class of the height?
Apakah kelas mod bagi ketinggian itu?

- A 141 – 145
 B 146 – 150
 C 151 – 155
 D 156 – 160
- 28 Given that the mean of 3, 9, 12, 8, 7, x , and 16 is 10, find the value of x .
Diberi bahawa min bagi 3, 9, 12, 8, 7, x , dan 16 ialah 10, cari nilai bagi x .
- A 12
 B 13
 C 14
 D 15

- 29 Diagram 11 shows the Venn diagram for the universal set ξ , set P and set Q .
Rajah 11 menunjukkan gambarajah Venn bagi set semesta ξ , set P dan set Q .

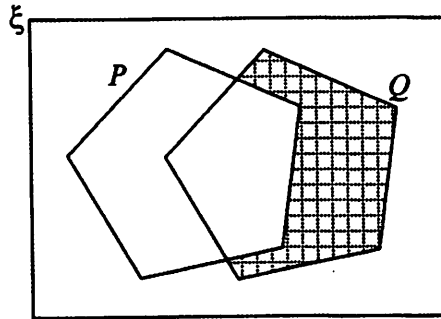


Diagram 11 / Rajah 11

The shaded region represents
Kawasan berlorek mewakili

- A $P' \cup Q$
 B $P' \cap Q$
 C $P \cup Q'$
 D $P \cap Q'$
- 30 Given set $\xi = \{x : 2 \leq x \leq 11, x \text{ is an integer}\}$ and set $Y = \{x : x \text{ is a prime number}\}$.
Diberi set $\xi = \{x : 2 \leq x \leq 11, x \text{ ialah integer}\}$ dan set $Y = \{x : x \text{ ialah nombor perdana}\}$.
List all the elements of Y .
Senaraikan semua unsur bagi Y .
- A $\{4, 6, 8, 9, 10, 11\}$
 B $\{2, 4, 6, 8, 10, 11\}$
 C $\{2, 3, 6, 8, 10\}$
 D $\{4, 6, 8, 9, 10\}$

- 31 Diagram 12 shows the Venn diagram for the set X , set Y and set Z . Given that $\xi = X \cup Y \cup Z$ and $n(Z') = n(X \cap Y \cap Z)$.
 Rajah 12 menunjukkan gambarajah Venn bagi set X , set Y dan set Z . Diberi bahawa $\xi = X \cup Y \cup Z$ dan $n(Z') = n(X \cap Y \cap Z)$.

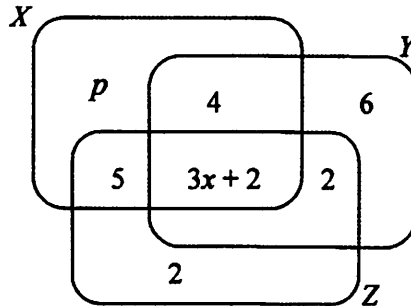


Diagram 12 / Rajah 12

Find the value of p .
 Cari nilai p .

- A 4
 B 5
 C 6
 D 7
- 32 Find the x -intercept of the straight line $3x - 2y = 6$.
 Cari pintasan- x bagi garis lurus $3x - 2y = 6$.
- A 2
 B -2
 C $\frac{2}{3}$
 D $-\frac{2}{3}$

33 In Diagram 13, the gradient of the straight line MN is $-\frac{1}{3}$.

Dalam Rajah 13, kecerunan garis lurus MN ialah $-\frac{1}{3}$.

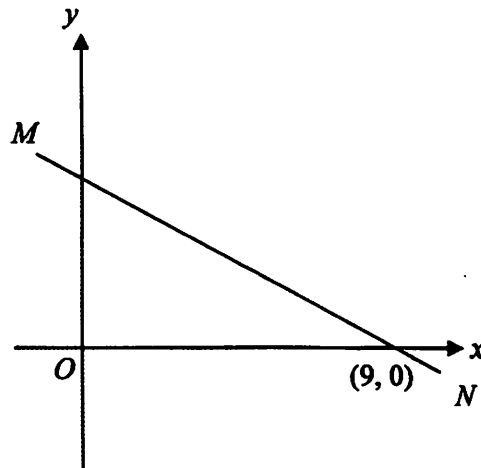


Diagram 13 / Rajah 13

Find the y -intercept of the straight line MN .
Cari pintasan- y bagi garis lurus MN .

- A 1
- B 2
- C 3
- D 4

- 34 In Diagram 14, PQR is a tangent to the circle at Q
 Dalam Rajah 14, PQR ialah tangen kepada bulatan di Q .

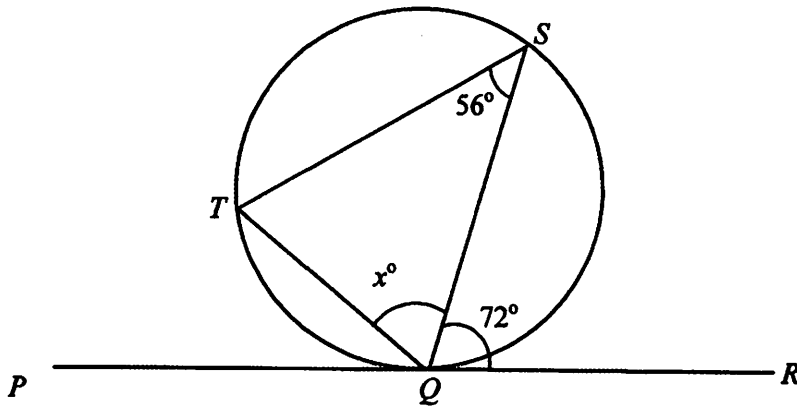


Diagram 14 / Rajah 14

Find the value of x .
 Cari nilai x .

- A 36
 B 52
 C 56
 D 72
- 35 If a student is chosen at random from a classroom, the probability of getting a boy is $\frac{3}{7}$.
 The classroom has 24 girls.
 Calculate the number of boys in the classroom.
- Jika seorang murid dipilih secara rawak daripada sebuah kelas, kebarangkalian ianya murid lelaki ialah $\frac{3}{7}$. Kelas itu mempunyai 24 orang murid perempuan.
 Hitungkan bilangan murid lelaki di dalam kelas itu.*

- A 42
 B 21
 C 18
 D 14

- 36 In Diagram 15, EF is a straight line.
Dalam Rajah 15, EF adalah garis lurus.

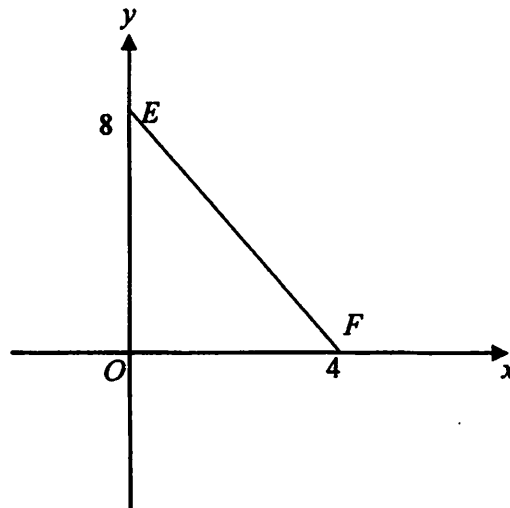


Diagram 15 / Rajah 15

The equation of EF is
Persamaan garis EF adalah

- A $y = 2x - 8$
- B $y = 2x + 8$
- C $y = -2x - 8$
- D $y = -2x + 8$

- 37 Diagram 16 shows five cards labeled with letters
Rajah 16 menunjukkan lima keping kad yang berlabel dengan huruf-huruf



Diagram 16 / Rajah 16

All the cards are put into a box. A two letter code is to be formed by using any two of these cards. Two cards are picked at random one after another without replacement. State the number of sample space.

Kesemua kad itu dimasukkan ke dalam sebuah kotak. Suatu kod dua huruf hendak dibentuk menggunakan mana-mana dua daripada kad itu. Dua keping kad dipilih secara rawak satu persatu tanpa dikembalikan. Nyatakan bilangan ruang sampel.

- A 5
B 10
C 15
D 20
- 38 In Diagram 17, MN is a straight line. Equation of MN is $2y = x + 10$
Dalam Rajah 17, MN adalah garis lurus. Persamaan garis lurus MN ialah $2y = x + 10$

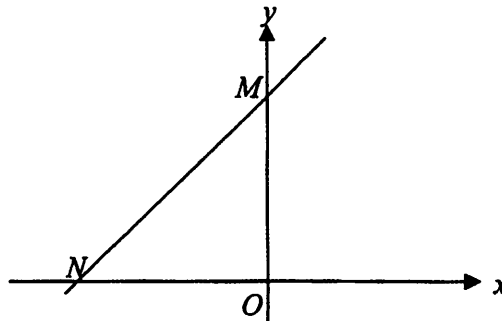


Diagram 17 / Rajah 17

The y-intercept of MN is
Pintasan-y bagi MN ialah

- A $\frac{1}{2}$
B 2
C 5
D 10

- 39 Diagram 18 shows a cuboid with rectangular base $ABCD$
Rajah 18 menunjukkan sebuah kuboid dengan tapak mengufuk $ABCD$.

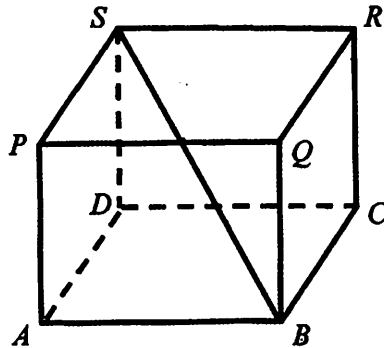


Diagram 18 / *Rajah 18*

Name the orthogonal projection of the line BS on the plane $BCRQ$.
Namakan unjuran ortogonal bagi garis BS di atas satah $BCRQ$.

- A BR
- B CQ
- C CR
- D AC

- 40 Diagram 19 shows a cuboid with rectangular base $PQRS$.
Rajah 19 menunjukkan sebuah kuboid dengan tapak mengufuk $PQRS$.

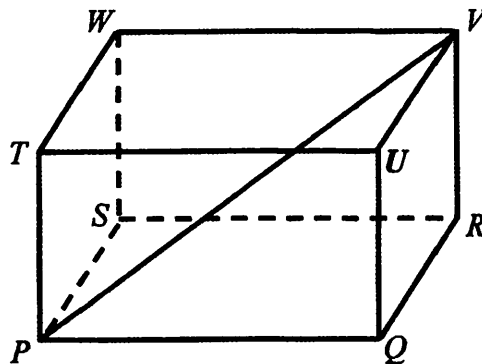


Diagram 19 / Rajah 19

Name the angle between the plane PV and the plane $PQRS$.
Namakan sudut di antara satah PV dengan satah $PQRS$.

- A $\angle VPQ$
- B $\angle VPR$
- C $\angle PVQ$
- D $\angle PVR$

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. Each question is followed by four alternative answers, **A, B, C** or **D**. For each question, choose **one** answer only. Blacken your answer on the objective answer sheet provided.
*Tiap-tiap soalan diikuti oleh empat pilihan jawapan, iaitu **A, B, C** dan **D**. Bagi setiap soalan, pilih satu jawapan sahaja. Hitamkan jawapan anda pada kertas jawapan objektif yang disediakan.*
4. If you wish to change your answer, erase the blackened mark that you have made. Then blacken the new answer.
Jika anda hendak menukar jawapan, padamkan tanda yang telah dibuat. Kemudian hitamkan jawapan yang baru.
5. The diagrams in the questions provided are not drawn to scale unless stated.
Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan.
6. A list of formulae is provided on pages 2 to 4.
Satu senarai rumus disediakan di halaman 2 hingga 4.
7. A booklet of four-figure mathematical tables is provided.
Sebuah buku sifir matematik empat angka disediakan.
8. You may use a non-programmable scientific calculator.
Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogram.

