

1449/1  
Matematik  
Kertas 1  
September  
2008  
1¼ jam

PEPERIKSAAN PERCUBAAN  
SIJIL PELAJARAN MALAYSIA  
NEGERI PERAK  
2008

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MATEMATIK

KERTAS 1

Satu jam lima belas minit

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JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

MAKLUMAT UNTUK CALON

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 2 hingga halaman 5.

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Kertas soalan ini mengandungi 20 halaman bercetak.

MOZ@C

**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 answer sheet.  
*Jawab dengan menghitamkan ruangan yang betul pada kertas jawapan.*
4. Blacken only one space for each question.  
*Bagi setiap soalan hitamkan satu ruangan sahaja.*
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 menukarkan jawapan, padamkan tanda yang telah dibuat.  
Kemudian hitamkan jawapan yang baru.*
6. The diagrams in the questions provided are not drawn to scale unless stated.  
*Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan.*
7. A list of formulae is provided on pages 3 to 5.  
*Satu senarai rumus disediakan di halaman 3 hingga halaman 5.*
8. A booklet of four-figure mathematical tables is provided.  
*Sebuah buku sifir matematik empat angka disediakan.*
9. You may use a non-programmable scientific calculator.  
*Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogram.*

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

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

### RELATIONS / PERKAITAN

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

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

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

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

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

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

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

Jarak

$$8 \quad \text{Midpoint, } (x, y) = \left( \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

Titik tengah

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

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

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

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

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

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

$$12 \quad \text{Pythagoras Theorem} \quad c^2 = a^2 + b^2$$

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

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

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

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

**SHAPES AND SPACE**  
**BENTUK DAN RUANG**

1. Area of trapezium =  $\frac{1}{2}$  x sum of parallel sides x height  
*Luas trapezium* =  $\frac{1}{2}$  x hasil tambah dua sisi selari x tinggi
  
2. Circumference of circle =  $\pi d = 2\pi r$   
*Lilitan bulatan* =  $\pi d = 2\pi j$
  
3. Area of circle =  $\pi r^2$   
*Luas bulatan* =  $\pi j^2$
  
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 x length  
*Isipadu prisma tegak* = luas keratan rentas x 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 =  $\frac{1}{3}$  x base area x height  
*Isipadu piramid tegak* =  $\frac{1}{3}$  x luas tapak x tinggi
  
11. Sum of interior angles of a polygon =  $(n-2) \times 180^\circ$   
*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 Evaluate and round off the answer to one decimal place.  
*Hitungkan dan bundarkan jawapan kepada satu tempat perpuluhan.*

$$10.32 - 14.62 \div 0.2$$

- A) -62.78                      B) -62.8  
C) -21.5                        D) 21.5
- 2 Express the number below in standard form.  
*Ungkapkan nombor di bawah sebagai bentuk piawai*

$$0.000000049$$

- A)  $4.9 \times 10^7$                       B)  $4.9 \times 10^8$   
C)  $4.9 \times 10^{-7}$                     D)  $4.9 \times 10^{-8}$

- 3 Solve  
*Selesaikan*

$$2.7 \times 10^{-7} - 9.1 \times 10^{-8}$$

- A)  $6.4 \times 10^{-8}$                       B)  $6.4 \times 10^{-7}$   
C)  $1.79 \times 10^{-8}$                     D)  $1.79 \times 10^{-7}$

- 4 Express the number below as a number in base ten.  
*Ungkapkan nombor di bawah sebagai nombor dalam asas sepuluh.*

$$110101_2$$

- A) 51                                      B) 52  
C) 53                                      D) 54

- 5 Find the value of x  
*Cari nilai x*

$$10101_2 + x = 110110_2$$

- A)  $10011_2$                               B)  $10101_2$   
C)  $11001_2$                               D)  $100001_2$

- 6 In figure 1, find the value of  $y^\circ$ .  
 Dalam rajah 1, cari nilai  $y^\circ$ .

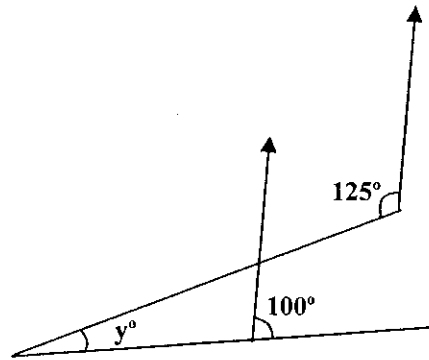
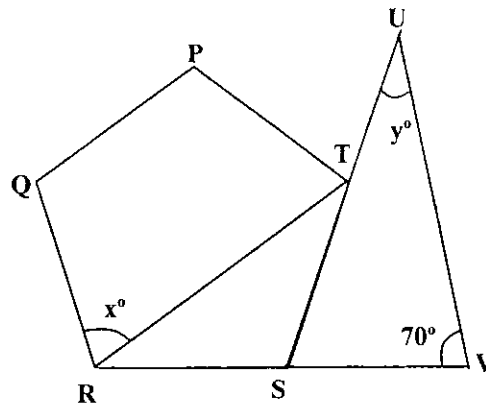


Figure 1

- A)  $45^\circ$                       B)  $55^\circ$   
 C)  $60^\circ$                       D)  $80^\circ$

- 7 In figure 2, PQRST is a regular pentagon, RSV and STU are straight lines. Calculate the value of  $x^\circ + y^\circ$ .  
 Dalam rajah 2, PQRST adalah sebuah pentagon sekata, RSV dan STU adalah garis lurus. Hitungkan nilai  $x^\circ + y^\circ$ .

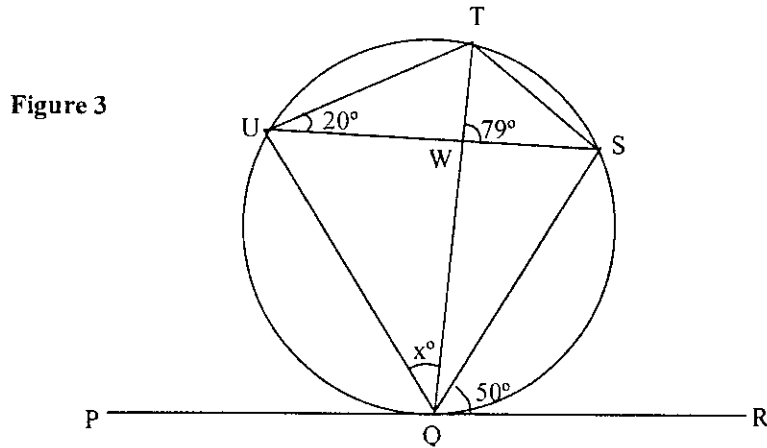
Figure 2



- A)  $110^\circ$                       B)  $120^\circ$   
 C)  $140^\circ$                       D)  $142^\circ$

8 In figure 3, PQR is a tangent to a circle QSTU at Q. QWT and UWS are straight lines. Calculate the value of  $x^\circ$ .

*Dalam rajah 3, PQR adalah tangen kepada bulatan QSTU pada Q. QWT dan UWS adalah dua garis lurus. Cari nilai  $x^\circ$ .*

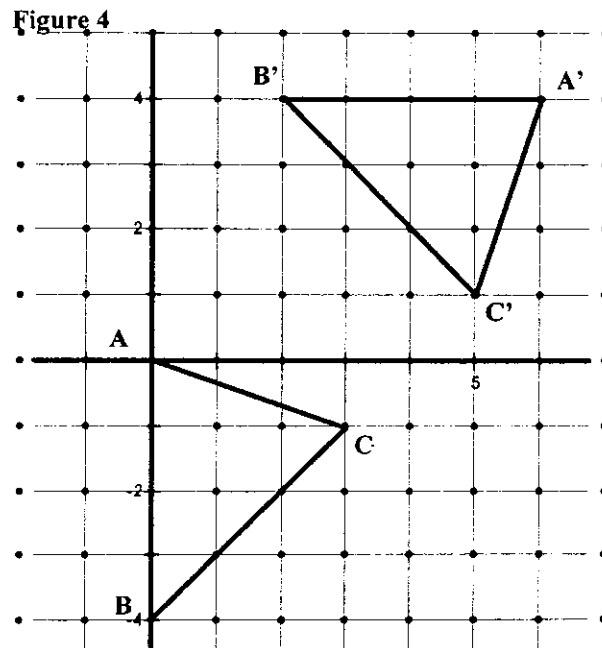


- A)  $20^\circ$
- B)  $50^\circ$
- C)  $51^\circ$
- D)  $70^\circ$

9 In figure 4, ABC is an object with A'B'C' as the image of the object under the clockwise rotation. Find the centre of the rotation and the angle of the rotation.

*Dalam rajah 4, ABC adalah objek dan A'B'C' adalah imej bagi objek tersebut di bawah putaran ikut arah jam.*

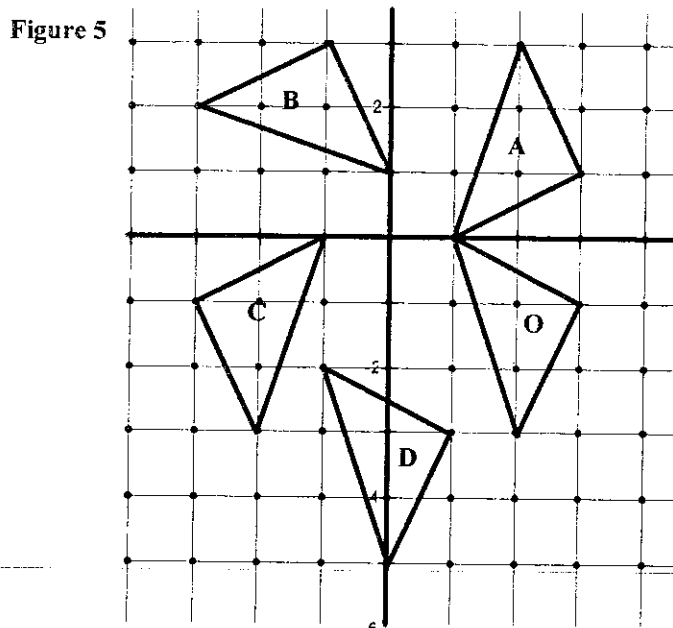
*Cari pusat putaran dan sudut putaran tersebut.*



- A) at point (0, 0) with angle  $90^\circ$   
*di pusat (0, 0) dan sudut  $90^\circ$*
- B) at point (5, -1) with angle  $90^\circ$   
*di pusat (5, -1) dan sudut  $90^\circ$*
- C) at point (0, 0) with angle  $180^\circ$   
*di pusat (0, 0) dan sudut  $180^\circ$*
- D) at point (-5, 1) with angle  $180^\circ$   
*di pusat (-5, 1) dan sudut  $180^\circ$*



- 10 In figure 5, state the position of the image of the object O under a reflection along the line  $y = x$ .  
Dalam rajah 5, nyatakan kedudukan imej objek O di bawah pantulan pada garis  $y = x$ .



11

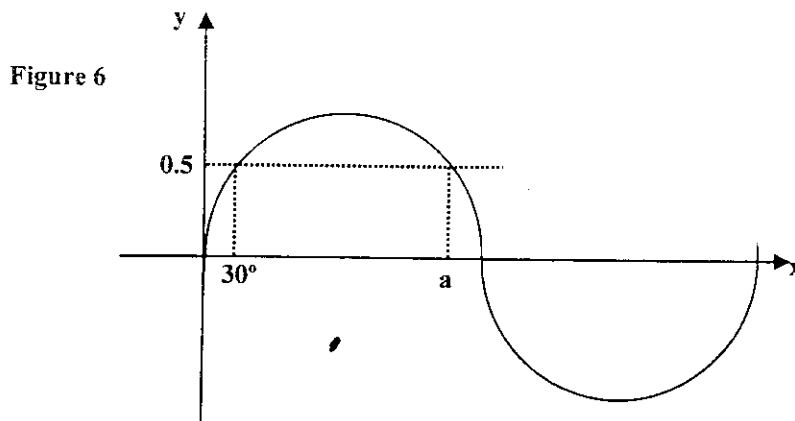
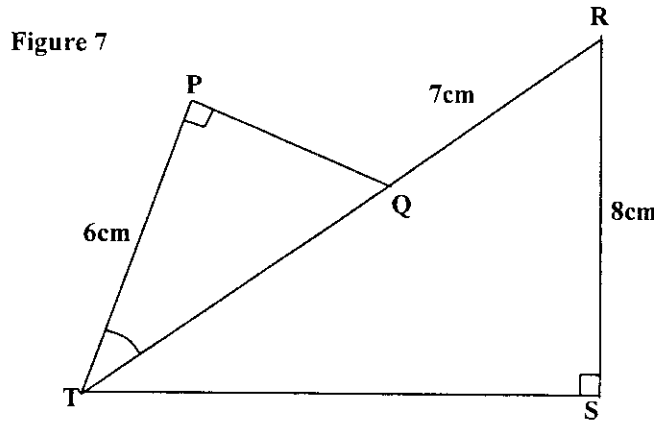


Figure 6 is a graph of function  $y = \sin x$ . Find the value of  $a$ .  
Rajah 6 menunjukkan graf fungsi  $y = \sin x$ . Cari nilai  $a$ .

- A)  $90^\circ$
- B)  $120^\circ$
- C)  $130^\circ$
- D)  $150^\circ$

12 In figure 7, RQT is a straight line. Given that  $\sin x^\circ = \frac{4}{5}$ , find the length of TS in cm.

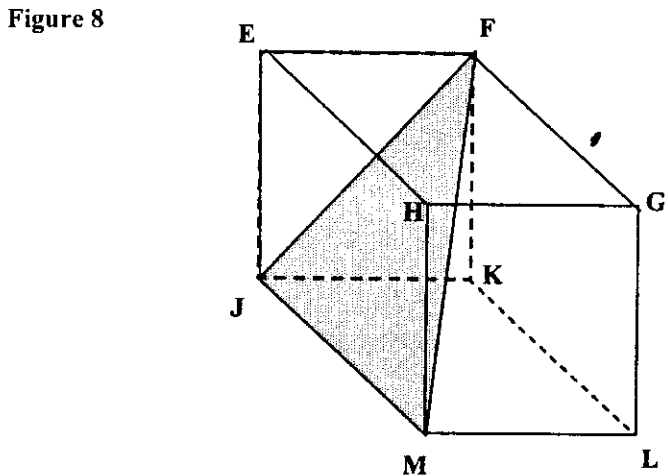
*Dalam rajah 7, RQT adalah garis lurus. Diberi  $\sin x^\circ = \frac{4}{5}$ , cari panjang TS dalam cm.*



- A) 18
- B) 15
- C) 12
- D) 10

13 Figure 8 shows a cuboid with horizontal base JKLM. Name the angle between the line JK and the plane JFM.

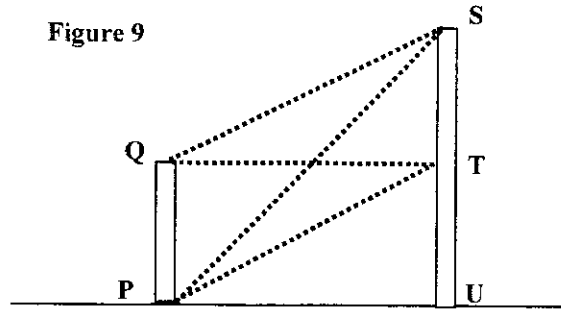
*Dalam rajah 8, menunjukkan sebuah kuboid dengan tapak mengufuk JKLM. Namakan sudut di antara garis JK dengan satah JFM*



- A)  $\angle FJK$
- B)  $\angle FMK$
- C)  $\angle FJM$
- D)  $\angle FMJ$

14

Figure 9



In figure 9, PQ and STU are two poles on horizontal ground. The angle of elevation of S from Q is

*Dalam rajah 9, PQ dan STU adalah dua batang tiang tegak di atas tanah mengufuk. Sudut dongak S dari Q ialah*

A)  $\angle TPS$

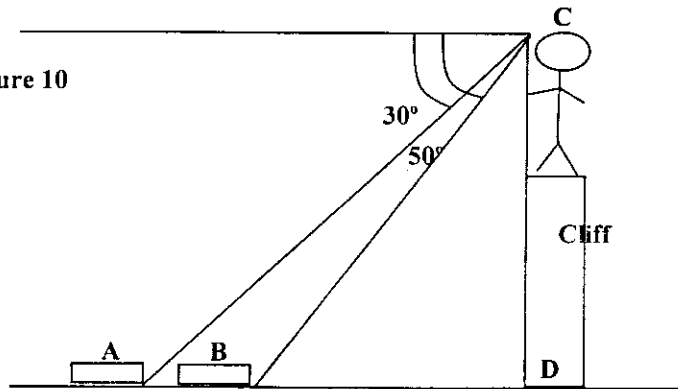
B)  $\angle TQS$

C)  $\angle UQS$

D)  $\angle UQT$

15

Figure 10



An observer is standing top of the cliff to measure the distance between boat A and boat B as shown in figure 10. Given that  $CD = 21.65\text{ m}$ , find the length of AB in  $\text{m}$  .

*Seorang pemerhati berdiri di atas sebuah tebing untuk mendapatkan jarak di antara sampan A dan sampan B seperti dalam rajah 10. Diberi  $CD = 21.65\text{m}$ , cari jarak AB dalam  $\text{m}$ .*

A) 37.5

B) 24.33

C) 19.33

D) 18.17

16

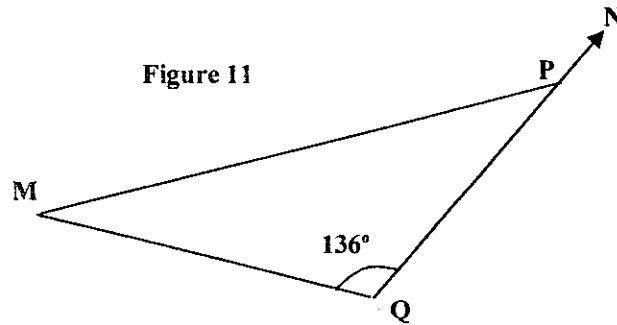


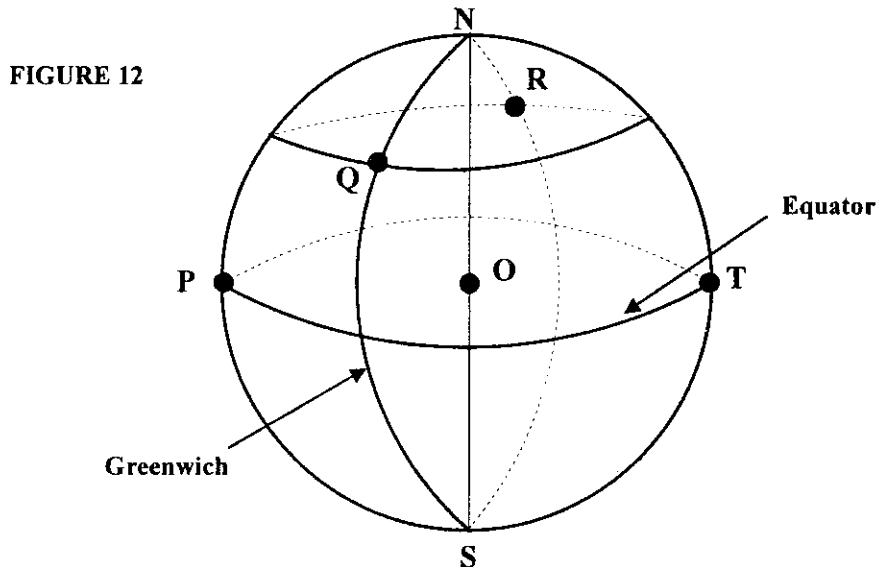
Figure 11 shows three points M, P and Q on a horizontal plane. Given that  $MQ = QP$ , find the bearing of M from Q.

Rajah 11, menunjukkan 3 titik M, P dan Q yang terletak pada satah mengufuk. Diberi  $MQ = QP$ , cari bearing titik M dari titik Q.

- A) 022°
  - B) 202°
  - C) 044°
  - D) 224°
- 17 Town A(60°S, 143°E) and town B(60°S, 75°E) are two towns on the surface of the earth. The distance, in nautical miles, from town B due west to town A is
- Bandar A(60°S, 143°T) dan bandar B(60°S, 75°T) adalah dua buah bandar yang terletak di atas permukaan bumi. Cari jarak dalam batu nautika dari bandar B menghala Barat ke bandar A

- A) 4080 nautical miles  
4080 batu nautika
- B) 6540 nautical miles  
6540 batu nautika
- C) 8760 nautical miles  
8760 batu nautika
- D) 17520 nautical miles  
17520 batu nautika

- 18 In figure 12, NOS is the axis of the earth and O is the centre of the earth. Which of the following points has a longitude of 0° .
- Dalam rajah 12, NOS adalah paksi bumi dan O adalah pusat bumi. Antara titik-titik berikut yang manakah mempunyai kedudukan longitud 0° .



- A) P
- B) R
- C) Q
- D) T

- 19 Simplify  
*Ringkaskan*

$$(m - n)^2 + (m + n)(n - m)$$

- A)  $2n^2 - 2mn$                                   B)  $2m^2 - 2mn$   
C)  $2n^2 - 2m$                                   D)  $2m^2 - 2n$

- 20 Given that  $\frac{\sqrt{h+3}}{2} = t$ , express h in term of t.

*Diberi  $\frac{\sqrt{h+3}}{2} = t$ , ungkapkan h dalam sebut t.*

- A)  $h = 4t^2 - 3$                                   B)  $h = 4t^2 + 3$   
C)  $h = 2t^2 - 3$                                   D)  $h = (2t-3)^2$

- 21 Express as a single fraction in its simplest form.  
*Ungkapkan sebagai satu pecahan tunggal dalam bentuk termudah.*

$$\frac{x}{4y} + \frac{x^2 - 6}{12xy}$$

- A)  $\frac{2x^2 - 3}{6xy}$     B)  $\frac{2x^2 + 3}{6xy}$   
C)  $\frac{2x - 3}{6xy}$     D)  $\frac{x^2 - 3}{6xy}$

- 22 Solve the equation below.  
*Selesaikan persamaan di bawah.*

$$4(p - 1) = \frac{2p}{3} - 2$$

- A)  $\frac{1}{5}$     B)  $\frac{2}{5}$   
C)  $\frac{3}{5}$     D)  $\frac{4}{5}$

- 23 Simplify  
*Ringkaskan*

$$(3m^2n^{-1})^2 \div (m^3n^2)^3$$

- A)  $3m^{-5}n^{-8}$                       B)  $9m^{-5}n^{-8}$   
C)  $3m^5n^8$                         D)  $9m^5n^8$

- 24 Find the value of  
*Nilaikan*

$$216^{2/3} \div (6^8 \times 5^{-2})^{1/2}$$

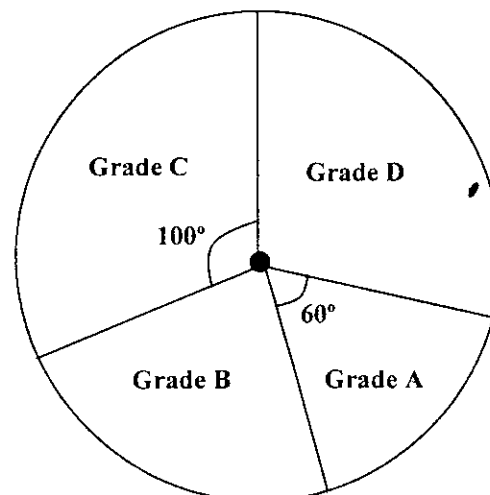
- A)  $\frac{36}{5}$                                       B)  $\frac{5}{36}$   
C)  $\frac{5}{2}$                                       D)  $\frac{2}{5}$

- 25 List all the integers of  $x$  that satisfy the inequalities below.  
*Senaraikan semua integer  $x$  yang memuaskan ketaksamaan di bawah.*

$$3x - 2 \leq x \leq 4 + 5x$$

- A) 0, 1                                      B) -1, 0, 1  
C) -1, 0, 1, 2                          D) -2, -1, 0, 1, 2

- 26 Figure 13



The pie chart in figure 13 shows the distributions of different grade of eggs sold by a shop. The sum of Grade A and Grade C eggs sold is 240. Calculate the sum of Grade B and Grade D eggs sold.

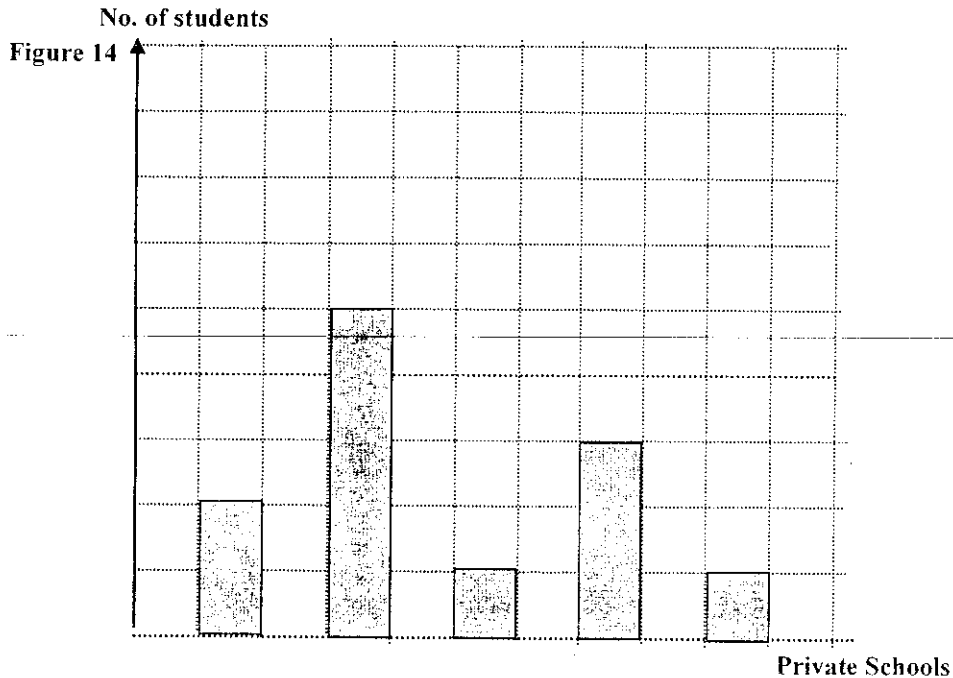
*Rajah 13 adalah carta pai menunjukkan pengagihan pelbagai jenis gred telur yang telah dijual oleh sebuah kedai. Sebanyak 240 biji telur gred A dan gred C telah dijual oleh pekedai tersebut. Kirakan jumlah telur gred B dan gred D yang telah dijual.*

- A) 300                                      B) 800  
C) 540                                      D) 1440

27 The bar chart in figure 14, are drawn on a square grid which represents the number of students from 5 private schools J, K, L, M and N. School J has 100 students. If the information below is given in a pie chart, find the angle of the sector which has the most number of students.

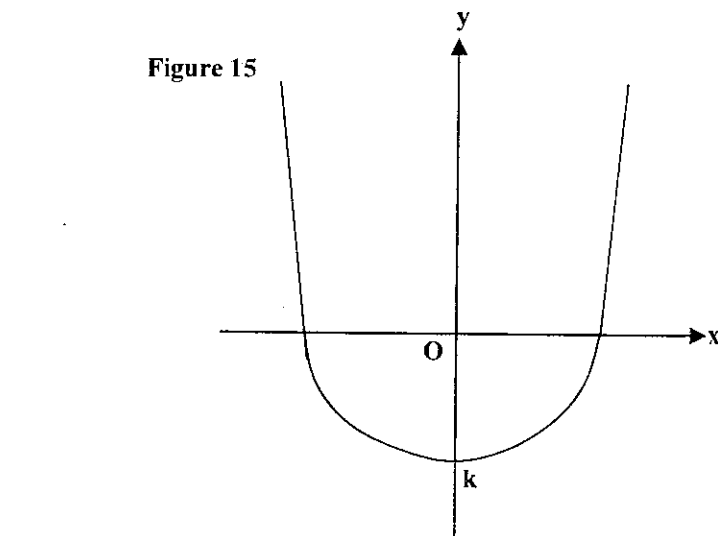
*Carta bar rajah 14 di bawah telah dilukis di atas grid segi empat sama. Carta bar tersebut menunjukkan bilangan pelajar di 5 buah sekolah swasta J, K, L, M dan N. Sekolah J mempunyai 100 orang pelajar.*

*Jika maklumat yang telah diberikan di bawah digambarkan dalam bentuk carta pai, cari sudut sektor yang mempunyai bilangan pelajar yang paling ramai.*



- A) 150
- B) 175
- C) 200
- D) 220

28 Figure 15 shows a graph for  $y = x^n - 4$  where  $n$  is an integer. Determine the value of  $k$ .



- A) -2
- B) 2
- C) 4
- D) -4

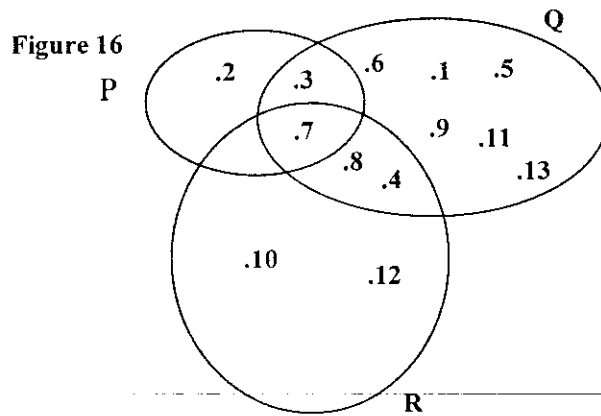
29 Venn Diagrams in figure 16 shows the elements of set P, Q and R.

List the elements of

Rajah 16 adalah gambar rajah Venn menunjukkan unsur-unsur bagi set P, Q dan R.

Senaraikan unsur bagi

$$P \cup (Q \cap R)$$



A) { 2 , 3 , 4 , 7 }

B) { 2 , 3 , 4 , 7 , 8 }

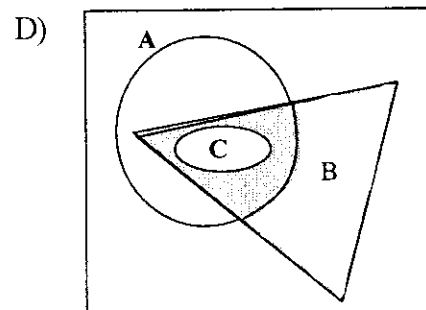
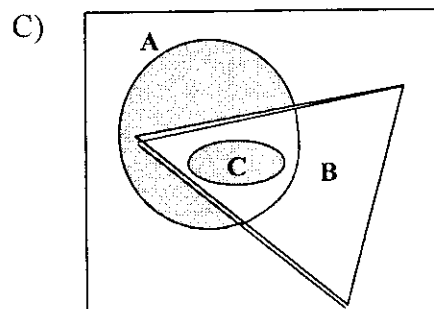
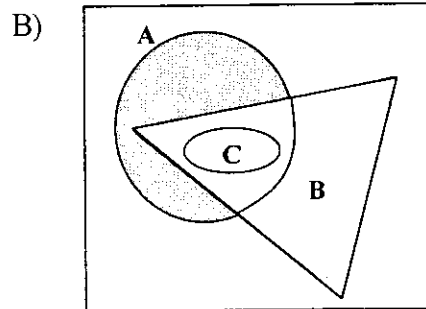
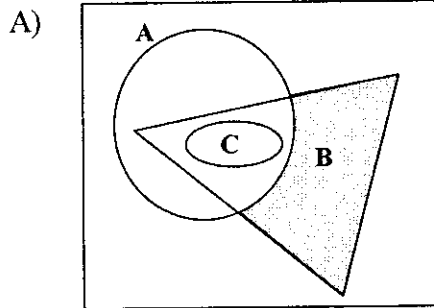
C) { 2 , 3 , 4 , 7 , 8 , 9 }

D) { 2 , 3 , 4 , 7 , 8 , 11 , 12 }

30 Which of the following shaded regions of the Venn diagrams represent

Antara gambar rajah venn berlorek yang manakah mewakili

$$(B \cup C) \cap A'$$





- 31 Given universal set  $\xi = P \cup Q \cup R$  where  
 Diberi set semesta  $\xi = P \cup Q \cup R$  di mana

$$\text{Set P} = \{ D, A, N, C, E \}$$

$$\text{Set Q} = \{ P, A, R, T, Y \}$$

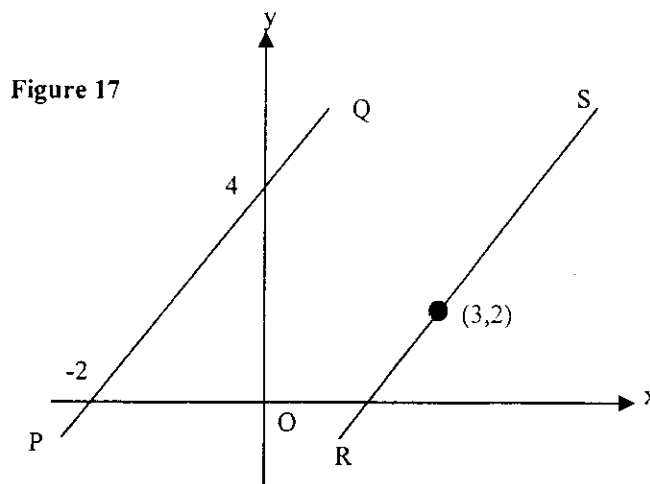
$$\text{Set R} = \{ H, A, P, P, Y \}$$

$$\text{Find } P \cap (Q \cup R)'$$

$$\text{Cari } P \cap (Q \cup R)'$$

- A)  $\{ A, C, D, E, H, P, N, R, T, Y \}$     B)  $\{ D, A, N, C, E \}$   
 C)  $\{ D, N, C, E \}$     D)  $\{ H, A, P, R, T, Y \}$

- 32 In figure 17 below, PQ and RS are two parallel lines. Find the x-intercept of the straight line RS.  
 Dalam rajah 17 di bawah, PQ dan RS adalah dua garis selari, cari pintasan-x bagi garis lurus RS.

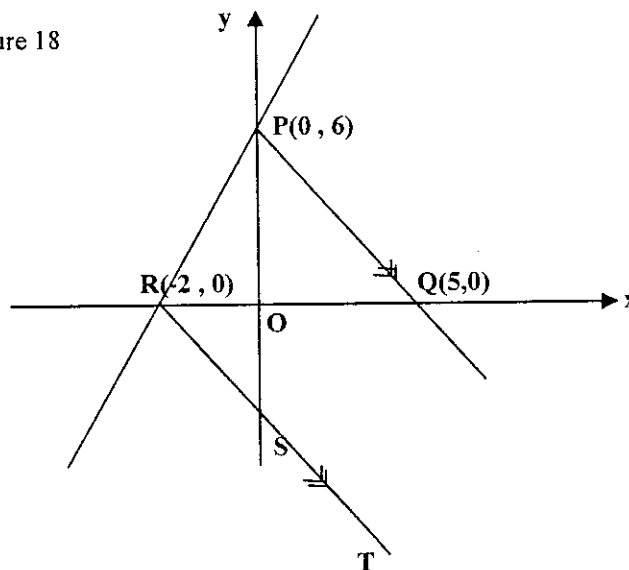


- A) 2    B) -2  
 C) 4    D) -4
- 33 Which of the following pairs are parallel lines.  
 Antara berikut yang manakah pasangan garis lurus selari.

- A)  $2x + y = 1$  and  $y + 2x = -5$   
 B)  $y = 3x$  and  $y + 3x = 11$   
 C)  $y = -2x + 9$  and  $-2y + 4x = 0$   
 D)  $x = 5y - 10$  and  $5x = y + 10$

34

Figure 18



In figure 18, PQ and RST are two parallel lines.  
Find the equation of the straight line RS .

*Dalam rajah 18 , PQ dan RST adalah dua garis lurus selari.  
Cari persamaan garis lurus RS.*

A)  $y = -\frac{6}{5}x + \frac{12}{5}$

B)  $y = \frac{2}{5}x - 2$

C)  $y = -\frac{6}{5}x - \frac{12}{5}$

D)  $y = -\frac{2}{5}x - 2$

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GERAK

GEMPUK

All the above alphabet cards are put into an empty box. A card is taken out at random from the box, state the probability that the card taken out is an alphabet R .

*Semua kad berhuruf yang ditunjukkan di atas dimasukkan ke dalam sebuah kotak kosong. Jika sekeping kad dikeluarkan secara rawak daripada kotak itu, nyatakan kebarangkalian bahawa kad yang dikeluarkan itu berhuruf R .*

A)  $\frac{2}{11}$

B)  $\frac{2}{8}$

C)  $\frac{1}{5}$

D)  $\frac{1}{6}$

- 36 A box consists of 5 red pens, 6 black pens and 9 blue pens. If  $x$  black pens are added into the box and the probability of getting a blue pen is  $\frac{1}{5}$ , find the value of  $x$ .

*Sebuah kotak mengandungi 5 pen merah, 6 pen hitam dan 9 pen biru. Jika sebanyak  $x$  pen hitam dimasukkan ke dalam kotak itu dan kebarangkalian mendapat pen biru ialah  $\frac{1}{5}$ .*

*Cari nilai  $x$ .*

- A) 5  
B) 6  
C) 10  
D) 25

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$x$	$p$	$r$
$y$	$q$	$\frac{2}{3}$

The above table shows the value of  $x$  and  $y$ . If  $x$  varies directly with  $y$  and  $\frac{p}{q} = 6$ , calculate the value of  $r$ .

*Jadual di atas menunjukkan nilai bagi pembolehubah  $x$  dan  $y$ .*

*Jika  $x$  berubah secara langsung dengan  $y$  dan  $\frac{p}{q} = 6$ , hitungkan nilai  $r$ .*

- A) 2  
B) 3  
C) 4  
D) 5

- 38 Given that  $y$  varies directly with  $\sqrt{x}$  and inversely with  $w$ . When  $x = 81$ ,  $w = 3$  and  $y = 27$ , find the value of  $y$  when  $w = 4$  and  $x = 49$ .

*Diberi  $y$  berubah secara langsung dengan  $\sqrt{x}$  dan secara songsang dengan  $w$ . Apabila  $x = 81$ ,  $w = 3$  dan  $y = 27$ , cari nilai  $y$  apabila  $w = 4$  dan  $x = 49$ .*

- A)  $12\frac{1}{2}$   
B)  $15\frac{3}{4}$   
C)  $17\frac{1}{4}$   
D) 15

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Given  $M - 2 \begin{pmatrix} 1 & 0 \\ 2 & 4 \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 2 & 4 \end{pmatrix}$  find matrix  $M$ .

Diberi  $M - 2 \begin{pmatrix} 1 & 0 \\ 2 & 4 \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 2 & 4 \end{pmatrix}$  cari nilai matrik  $M$ .

A)  $\begin{pmatrix} 3 & 0 \\ 9 & 8 \end{pmatrix}$

B)  $\begin{pmatrix} 3 & 0 \\ 6 & 12 \end{pmatrix}$

C)  $\begin{pmatrix} 2 & 0 \\ 4 & 8 \end{pmatrix}$

D)  $\begin{pmatrix} 2 & 0 \\ 4 & 4 \end{pmatrix}$

40 Evaluate the product of these two matrices.

Cari hasil darab dua matrik berikut.

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

A)  $\begin{pmatrix} -18 & 17 \\ 11 & 0 \end{pmatrix}$

B)  $\begin{pmatrix} -18 & 13 \\ -4 & 10 \end{pmatrix}$

C)  $\begin{pmatrix} -12 & -10 \\ 3 & -6 \end{pmatrix}$

D)  $\begin{pmatrix} -18 & -17 \\ -2 & 0 \end{pmatrix}$

END OF QUESTION PAPER  
KERTAS SOALAN TAMAT