

JABATAN PELAJARAN TERENGGANU
DENGAN KERJASAMA
PERSIDANGAN KEBANGSAAN PENGETUA
SEKOLAH MENENGAH MALAYSIA
CAWANGAN TERENGGANU

2007

FORM FOUR

FINAL EXAMINATION

MATHEMATICS

PAPER 1

One hour fifteen minutes

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO

1. *This question paper is bilingual.*
2. *Questions on the above are in English and questions in bracket below are in Malay.*
3. *Candidates are required to read the information on pages 2 and 3.*

This question booklet consists of 23 printed pages.

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 menukar sesuatu jawapan, padamkan hingga bersih 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 dilukiskan mengikut skala kecuali dinyatakan]
7. *A list of formulae is provided on pages 4 to 5.*
[Satu senarai rumus di halaman 4 hingga halaman 5]
8. *You can use a booklet of four-figure mathematical tables.*
[Buku sifir matematik empat angka boleh digunakan.]
9. *You may use a non-programmable scientific calculator.*
[Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh deprogram].

MATHEMATICAL FORMULAE

The following formulae are helpful in answering the questions. The symbols given are 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 = $\sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$

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 = $\frac{\text{sum of (class mark} \times \text{frequency)}}{\text{sum of frequencies}}$

12. Pythagoras Theorem

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

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

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

SHAPES AND SPACE

1. Area of trapezium = $\frac{1}{2} \times \text{sum of parallel sides} \times \text{height}$
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 = $\frac{1}{3} \times \text{base area} \times \text{height}$
11. Sum of interior angles of a polygon = $(n - 2) \times 180^\circ$
12. $\frac{\text{arc length}}{\text{circumference of circle}} = \frac{\text{angle subtended at centre}}{360^\circ}$
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.

Answer all questions.

1. Round off 0.07826 correct to three significant figures.

[Bundarkan 0.07826 betul kepada tiga angka bererti.]

- A 0.0783
- B 0.0782
- C 0.07820
- D 0.07830

2. Express 3.568×10^{-4} as a single number.

[Ungkapkan 3.568×10^{-4} sebagai satu nombor tunggal.]

- A 3568
- B 35680
- C 0.003568
- D 0.000 3568

3. $\frac{0.85}{5 \times 10^{-5}} =$

- A 1.7×10^2
- B 1.7×10^3
- C 1.7×10^4
- D 1.7×10^5

4.

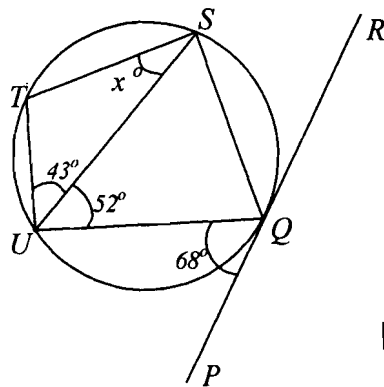


Diagram 1
[Gambarajah 1]

In diagram 1, PQR is a tangent to the circle $QSTU$ at point Q . Find the value of x .

[Dalam rajah 1, PQR ialah tangen kepada bulatan $QSTU$ di Q .]

- A 15°
- B 17°
- C 24°
- D 47°

5.

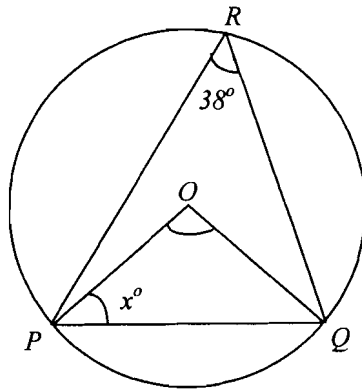


Diagram 2
[Rajah 2]

Diagram 2 shows a circle with centre O . Find the value of x

[Rajah 2 menunjukkan bulatan berpusat O . Carikan nilai x]

- A 52°
- B 76°
- C 715°
- D 104°

6.

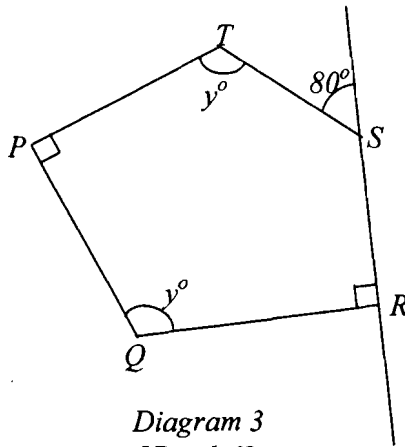


Diagram 3
[Rajah 3]

Diagram 3 shows a pentagon $PQRST$. The value of y is

[Rajah 3 di atas menunjukkan sebuah pentagon $PQRST$. Nilai y ialah]

- A 40°
- B 130°
- C 140°
- D 160°

7. Which of the following is *not* written in standard form?

[Diantara nombor-nombor yang berikut, yang manakah *tidak* ditulis dalam bentuk piawai?]

- A 0.14×10^3
 B 4.71×10^{-2}
 C 5.14×10
 D 5.2×10^5
8. $7.5 \times 10^5 + 6.2 \times 10^4$

- A 1.37×10^4
 B 1.37×10^5
 C 8.12×10^5
 D 8.12×10^6

- 9.

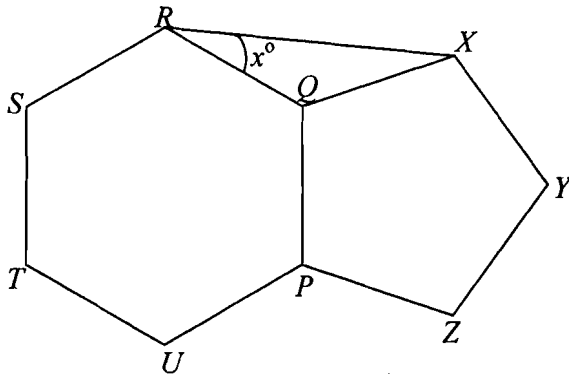


Diagram 4
 [Rajah 4]

In the *Diagram 4* above, $PQRSTU$ and $PQXYZ$ are regular hexagon and regular pentagon respectively. The value of x is.

[*Dalam rajah 4* di atas, $PQRSTU$ dan $PQXYZ$ merupakan heksagon sekata dan pentagon sekata masing-masing. Nilai x ialah]

- A 24°
 B 32°
 C 48°
 D 50°

10.

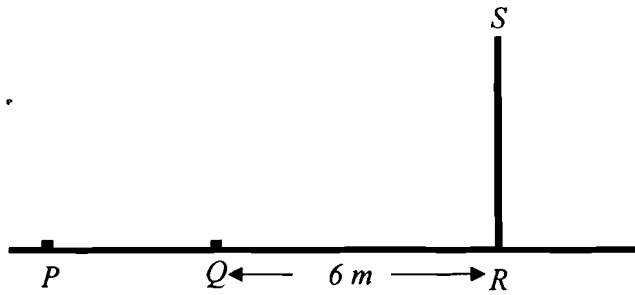


Diagram 5
[Rajah 5]

In *diagram 5*, P, Q and R are three points on the horizontal ground such that PQR is a straight line. RS is a vertical pole. The angle of depression of point P and point Q from peak S are 35° and 50° respectively.

Calculate the distance of PQ in m

[Dalam *raja*h 5 di atas, P, Q dan R ialah tiga titik pada tanah mengufuk dengan PQR ialah garis lurus. RS ialah sebatang tiang tegak. Sudut tunduk titik P dan Q dari puncak S ialah masing-masing 35° dan 50° . Hitungkan jarak PQ dalam m]

- A 2.07 m
- B 3.51 m
- C 4.21 m
- D 8.51 m

11.

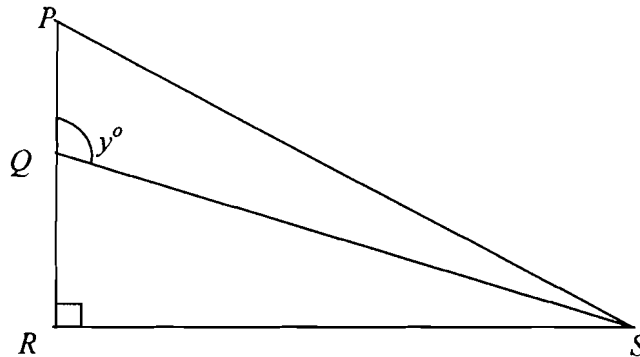


Diagram 6
[Rajah 6]

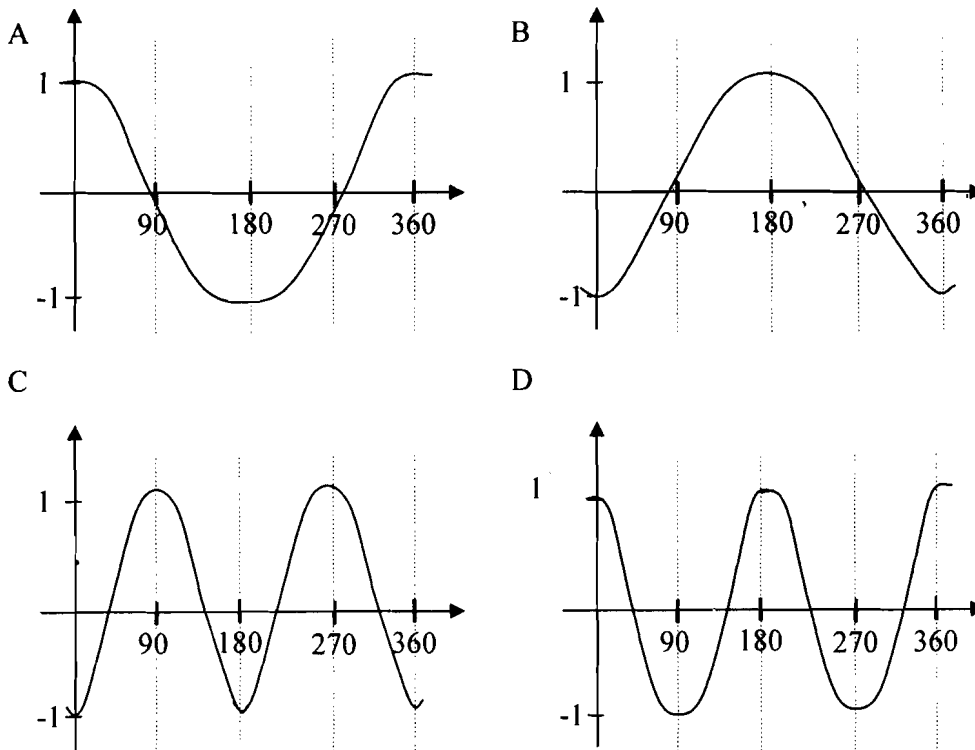
In *diagram 6*, PQR is a straight line. Given $PQ = 3$ cm, $QS = 10$ cm and $QR = 2PQ$. Find the value of $\cos y^\circ$.

[Dalam *raja*h 6, PQR ialah garis lurus. Diberi bahawa $PQ = 3$ cm, $QS = 10$ cm dan $QR = 2PQ$. Hitungkan nilai $\cos y^\circ$]

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

12. Which of the following graphs represent $y = \cos 2x^\circ$?

[Antara berikut, yang manakah mewakili graf $y = \cos 2x^\circ$?]



13.

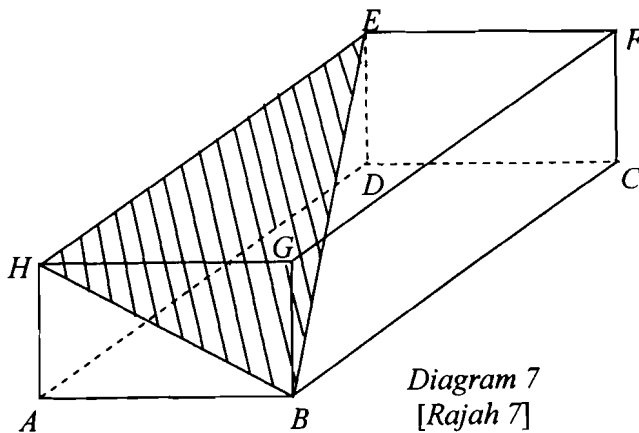


Diagram 7
[Rajah 7]

Diagram 7 shows a cuboid with a rectangular-base $ABCD$. The angle between plane BEH and plane $ADEH$ is

[Rajah 7 menunjukkan sebuah kuboid dengan tapaknya segiempat tepat $ABCD$. Sudut diantara satah BEH dan $ADEH$]

- A $\angle BED$
- B $\angle BHA$
- C $\angle EBD$
- D $\angle HBA$

14.

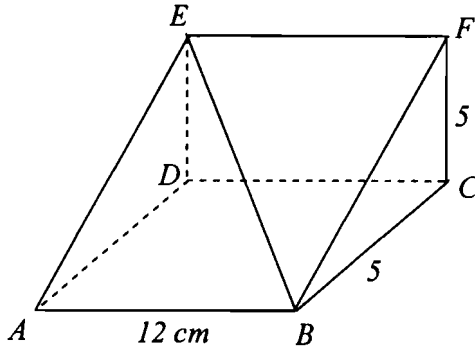


Diagram 8
[Rajah 8]

Diagram 8 shows a right prism with base $ABCD$. The value of angle between line EB and base $ABCD$ is

[Rajah 8 menunjukkan sebuah prisma tegak dengan tapaknya $ABCD$. Nilai sudut antara garis EB dan tapak $ABCD$ ialah]

- A $19^{\circ} 04'$
- B $21^{\circ} 02'$
- C $22^{\circ} 37'$
- D $67^{\circ} 23'$

15.

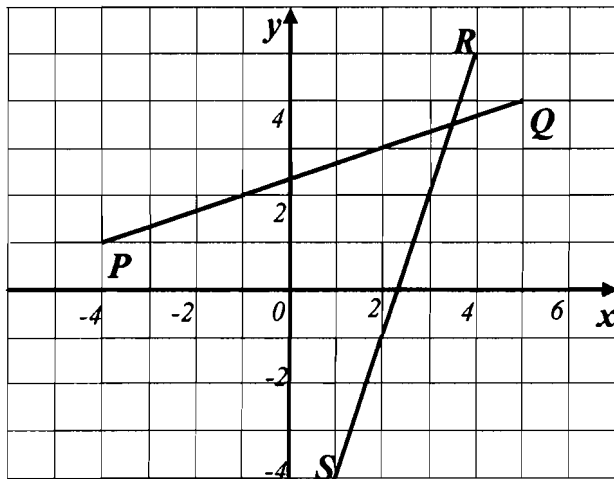


Diagram 9
[Rajah 9]

In diagram 9, RS is the image of PQ under a reflection. State the equation of the line of the reflection

[Dalam Rajah 9, RS ialah imej kepada PQ di bawah satu pantulan. Nyatakan persamaan garis pantulan tersebut.]

- A $x - \text{axis}$
- B $y - \text{axis}$
- C $y = x$
- D $y = -x$

16.

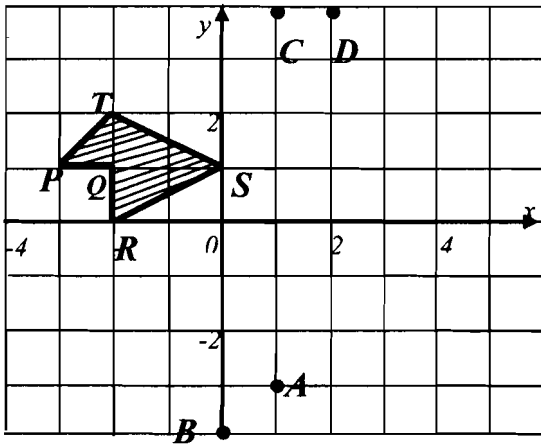


Diagram 10
[Rajah 10]

In the Diagram 10, which of the point A, B, C and D is the image of the point P under the anticlockwise rotation of 90° about the centre (1, 0).

[Dalam rajah 10, antara titik-titik A, B, C dan D, yang manakah merupakan imej bagi titik Q di bawah satu putaran lawan arah jam sebanyak 90° berpusat di (1, 0)]

17. Express $\frac{2p+1}{pq} - \frac{2-q}{q}$ as a single fraction in its simplest form.

[Ungkapkan $\frac{2p+1}{pq} - \frac{2-q}{q}$ sebagai satu pecahan tunggal dalam bentuk termudah.]

A $\frac{1-pq}{pq}$

B $\frac{pq+1}{pq}$

C $\frac{2p-1}{pq}$

D $\frac{2p+pq-1}{pq}$

18. Simplify $t - t(4 - 3t) - 7$

[Permudahkan $t - t(4 - 3t) - 7$]

A $-3t^2 + 3t + 7$

B $-3t^2 - 5t + 7$

C $3t^2 - 3t - 7$

D $3t^2 + 5t - 7$

19.

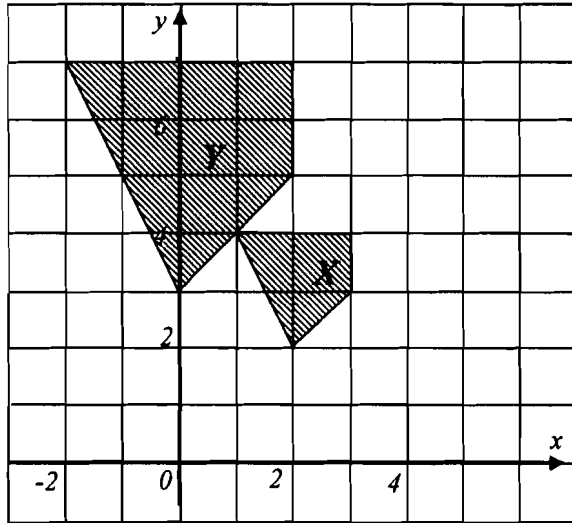


Diagram 11
[Rajah 11]

Diagram 11 show quadrilateral X which is the image of quadrilateral Y under an enlargement. Find the scale factor of an enlargement.

[Rajah 11 menunjukkan sisiempat X yang merupakan imej kepada sisiempat Y di bawah suatu pembesaran. Carikan factor skala bagi pembesaran tersebut]

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

20. Given $p = \frac{\sqrt{x-1}}{3}$. Express x in terms of p .

[Diberi $p = \frac{\sqrt{x-1}}{3}$. Ungkapkan x dalam sebutan p .]

- A $x = 3p^2 + 1$
- B $x = 3(p^2 + 1)$
- C $x = 9p^2 + 1$
- D $x = 9(p^2 + 1)$

21. Given $5k + 2 = 6 - 3(k - 1)$, Calculate the value of k .

[Diberi $5k + 2 = 6 - 3(k - 1)$,. Hitungkan nilai k .]

A $\frac{7}{8}$

B $\frac{8}{7}$

C $\frac{11}{8}$

D $\frac{11}{2}$

22. Given $\frac{16}{4^{2n}} = 4^n$, find the value of a .

[Diberi $\frac{16}{4^{2n}} = 4^n$, carikan nilai n .]

A $\frac{1}{2}$

B $\frac{2}{3}$

C 1

D 2

23. Simplify $(xy^2)^3 \div x^{-2}y^4$

[Ringkaskan $(xy^2)^3 \div x^{-2}y^4$]

A xy^{10}

B $x^{-1}y^{10}$

C x^3y^2

D x^5y^2

24. Calculate the value of $2^{-1} \div 16^{\frac{3}{4}}$

[Hitungkan nilai $2^{-1} \div 16^{\frac{3}{4}}$]

- A $\frac{1}{16}$
- B $\frac{1}{4}$
- C 4
- D 16
25. List all integers y that satisfy both inequalities $5 - 2y < 1$ and $3y - 7 \leq 2y$

[Senaraikan semua integer y yang memuaskan ketaksamaan $5 - 2y < 1$ dan $3y - 7 \leq 2y$]

- A 3, 4, 5, 6
- B 3, 4, 5, 6, 7
- C 2, 3, 4, 5, 6
- D 2, 3, 4, 5, 6, 7

26.

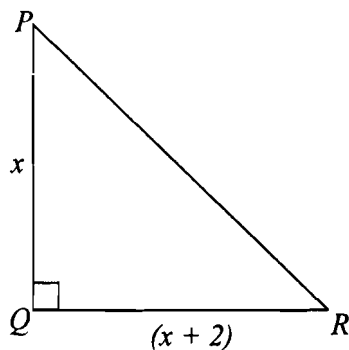


Diagram 12
[Rajah 12]

Given that the area of right angle triangle PQR in *diagram 12* is 12 cm^2 . Calculate the length of QR

[Diberi bahawa luas segitiga bersudut tegak PQR dalam *rajah 12* ialah 12 cm^2 . Kirakan panjang QR .]

- A -4
- B 4
- C 6
- D 8

27.

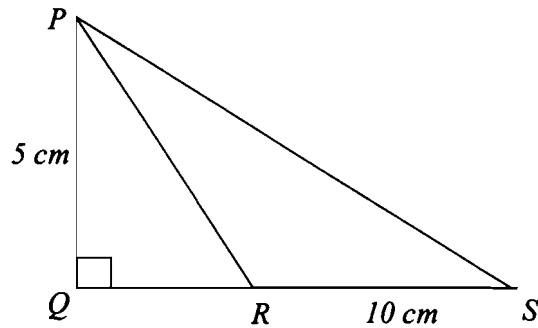


Diagram 13

[Rajah 13]

In *diagram 13* QRS is a straight line. Given that, $PQ = 5$ cm, $RS = 10$ cm and $\cos \angle SPQ = \frac{5}{13}$, calculate the length of QR .

[Dalam *rajab 13*, QRS ialah garis lurus. Diberi bahawa $PQ = 5$ cm, $RS = 10$ cm dan $\cos \angle SPQ = \frac{5}{13}$, hitungkan panjang QR]

- A 2
- B 5
- C 12
- D 13

28. Determine the y -intercept of straight line $4x - 3y = 24$.

[Tentukan pintasan- y bagi garis lurus $4x - 3y = 24$.]

- A -6
- B -8
- C -24
- D 24

29.

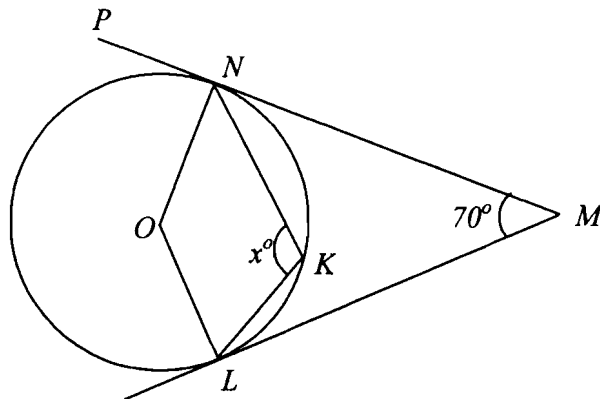


Diagram 14
[Rajah 14]

In *diagram 14*, PNM and LM are tangents to the circle with centre O at the point N and L . Determine the value of x .

[Dalam *Rajah 14*, PNM dan LM ialah tangen kepada bulatan berpusat O masing-masing dititik N dan L . Tentukan nilai x .]

- A 55°
 B 70°
 C 110°
 D 125°
30. Determine the x -intercept of straight line AB passing through points $A(-1, -4)$ and $B(1, 2)$.

[Tentukan pintasan $-x$ bagi garis lurus AB yang melalui titik $A(-1, -4)$ dan $B(1, 2)$]

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

31.

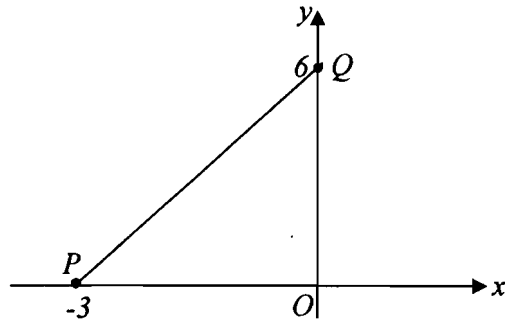


Diagram 15
[Rajah 15]

From the *diagram 15* above, the correct statement is

[Dari *raajah 15* di atas, pernyataan yang betul ialah]

Answer [Jawapan]	X – intercept [Pintasan – x]	Y – intercept [Pintasan – y]	Gradient [Kecerunan]
A	- 3	6	-2
B	-3	6	2
C	3	-6	$\frac{1}{2}$
D	6	-3	$-\frac{1}{2}$

32.

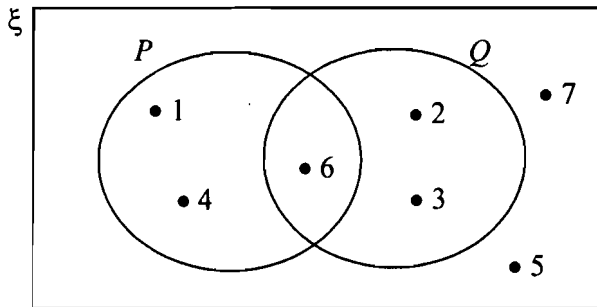


Diagram 16
[Rajah 16]

In *diagram 16*, the elements of sets $(P \cup Q) =$

[Dalam *raajah 16*, unsur-unsur kepada set $(P \cup Q) =$]

- A {6}
- B {5, 7}
- C {1, 2, 3, 4}
- D {1, 2, 3, 4, 6}

33.

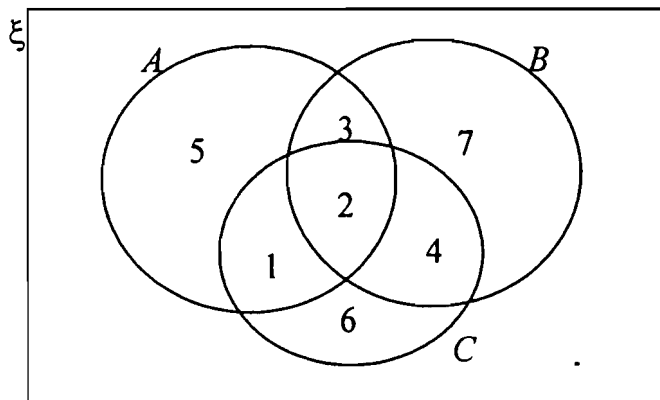


Diagram 17
[Rajah 17]

Diagram 17 is a Venn diagram shows the number of elements of sets A , sets B and sets C . Given that $n(\xi) = 30$. Find the value of $n(A \cup C)$.

[Gambarajah Venn di *raja*h 17 menunjukkan bilangan unsur bagi set A , set B dan set C . Diberi bahawa $n(\xi) = 30$. Carikan nilai bagi $n(A \cup C)$.]

- A 2
- B 6
- C 7
- D 9

34.

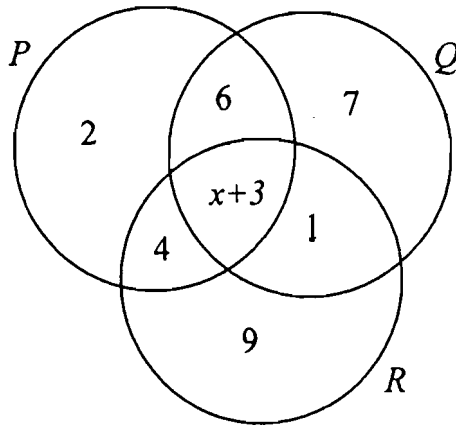


Diagram 18
[Rajah 18]

Diagram 18 is a Venn diagram shows the number of elements of sets P , Q , and R . Given $\xi = P \cup Q \cup R$ and $nP = nP'$. Find the value of x .

[Rajah 18 ialah gambarajah Venn yang menunjukkan bilangan unsure bagi set P , Q , dan R . Diberi $\xi = P \cup Q \cup R$ dan $nP = nP'$. Carikan nilai x .]

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

35. Given sets $P = \{f, i, l, e, m\}$, sets $Q = \{t, i, l, a, m\}$, sets $R = \{k, e, l, a, m\}$ and $\xi = P \cup Q \cup R$. Find $(P \cap Q \cap R)'$

[Diberi set $P = \{f, i, l, e, m\}$, set $Q = \{t, i, l, a, m\}$, set $R = \{k, e, l, a, m\}$ dan $\xi = P \cup Q \cup R$. Carikan $(P \cap Q \cap R)'$]

- A $\{m\}$
- B $\{l, m\}$
- C $\{i, l, e, m\}$
- D $\{a, f, i, e, t, k\}$

36. Which of the following is the converse of this implication;

"If x is divisible by 2 then x is an even number"

[Yang manakah di antara berikut merupakan akas kepada implikasi ini;

"Jika x boleh dibahagi dengan 2, maka x merupakan nombor genap"]

- A *If x is an even number then x is divisible by 2.*
[*Jika x merupakan nombor genap maka x boleh dibahagi dengan 2*]
- B *If x is divisible by 2 then x is divisible by an even number*
[*Jika x boleh dibahagi dengan 2 maka x boleh dibahagi dengan nombor genap*]
- C *If x is an even number, x also divisible by 2.*
[*Jika x merupakan nombor genap, x juga boleh dibahagi dengan 2*]
- D *x is an even number so it is divisible by 2.*
[*x merupakan nombor genap, oleh itu ia boleh dibahagi dengan 2*]

37.

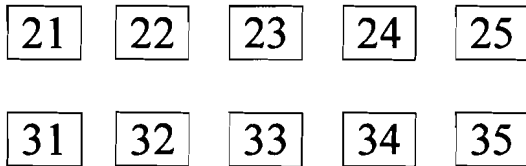


Diagram 19
[Rajah 19]

A box contain 10 cards which shown in the *diagram 19* above. A card is randomly drawn from the box. What is the probability of choosing the prime number.

[Sebuah kotak mengandungi 10 keping kad sebagaimana *rajah 19* di atas. Sekeping kad dikeluarkan secara rawak dari kotak tersebut. Apakah kebarangkalian nombor perdana dipilih]

A $\frac{1}{5}$

B $\frac{2}{5}$

C $\frac{3}{5}$

D $\frac{4}{5}$

38. On any day the probability of vehicle passing through a toll plaza being a car is $\frac{12}{27}$.

Assuming that there are 1800 vehicles passing through the toll plaza on a particular day and each car is charged RM8.00. Find the toll collected from the car passing through the toll plaza on that day.

[Kebarangkalian kenderaan yang melalui plaza tol tertentu bagi sebuah kereta ialah $\frac{12}{27}$. Dengan mengandaikan sebanyak 1800 buah kenderaan telah melalui plaza tol tersebut pada suatu hari. Bayaran yang dikenakan untuk sebuah kereta ialah RM8.00.

Hitungkan jumlah kutipan dari kereta yang melalui plaza tol tersebut]

A RM 1440.00

B RM 2160.00

C RM 4800.00

D RM 6400.00

39.

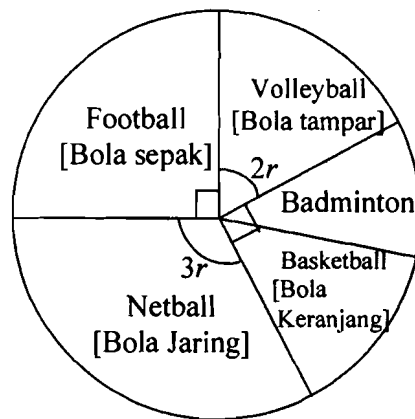


Diagram 20
[Rajah 20]

Pie chart in *diagram 20* shows the number of 220 students who choose football, netball, basketball, volleyball and badminton for co-curriculum activities. If the total of student who choose basketball and badminton is 35, calculate the number of student who choose volleyball.

[Carta pai dalam rajah 20 menunjukkan bilangan 220 orang pelajar yang memilih bola sepak, bola jaring, bola keranjang, bola tampar dan badminton untuk aktiviti ko-kurikulum. Jika jumlah pelajar yang memilih bola keranjang dan badminton ialah 35 orang, hitungkan jumlah pelajar yang memilih bola tampar]

- A 50
- B 60
- C 70
- D 90

40.

Score [Skor]	0	1	2	3	4	5
Cumulative Frequency [Kekerapan Longgokan]	2	3	6	11	17	20

Table 1
[Jadual 1]

Table 1 shows the cumulative frequency for the score of a game. The frequency of score 3 is

[Jadual 1 menunjukkan kekerapan longgokan bagi skor suatu permainan. Kekerapan skor 3 ialah]

- A 2
- B 3
- C 5
- D 11

END OF QUESTION PAPER
[KERTAS SOALAN TAMAT]