NO. KAD PENGENALAN | | | | | | | - | | | - | | | | |

ANGKA GILIRAN | | | | | | | | | |

**SOALAN PRAKTIS BESTARI**
**PROJEK JAWAB UNTUK JAYA (JUJ) 2014**

# SIJIL PELAJARAN MALAYSIA 1449/1

**MATHEMATICS**
**Kertas 1 (SET 2)**

1¼ jam Satu jam lima belas minit

**JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU**

1. Kertas soalan ini adalah dalam dwibahasa.

2. Calon dikehendaki membaca maklumat di halaman belakang kertas soalan ini.

Kertas soalan ini mengandungi 21 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* = $\sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$

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

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

*Purata Laju* = $\frac{jarak\ yang\ dilalui}{masa\ yang\ diambil}$

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

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

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

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

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 $m = -\frac{y - \text{int}ercept}{x - \text{int}ercept}$

$m = -\frac{p\,\text{int}asan - y}{p\,\text{int}asan - x}$

## SHAPES AND SPACE

## *BENTUK DAN RUANG*

1 Area of trapezium $= \frac{1}{2} \times$ sum of parallel sides $\times$ height

*Luas trapezium* $= \frac{1}{2} \times$ *hasil tambah dua sisi selari* $\times$ *tinggi*

2 Circumference of circle $= \pi d = 2\pi r$

*Lilitan bulatan* $= \pi d = 2j$

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 $\times$ length

*Isipadu prisma tegak* = *luas kerentas* $\times$ *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 $= \frac{1}{3} \times$ base area $\times$ height

Isipadu piramid tegak $= \frac{1}{3} \times$ luas tapak $\times$ tinggi

11 Sum of interior angles of a polygon

*Hasil tambah sudut pedalaman poligon*

$= (n-2) \times 180°$

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

$\frac{\textit{panjang lengkok}}{\textit{lilitan bulatan}} = \frac{\textit{sudut pusat}}{360°}$

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

$\frac{\textit{luas sektor}}{\textit{luas bulatan}} = \frac{\textit{sudut pusat}}{360°}$

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

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

15 Area of image = $k^2 \times$ area of object

*Luas imej* = $k^2 \times$ *luas objek*

1. Round off 0.05482 correct to two significant figures.
   *Bundarkan 0.05482 betul kepada dua angka bererti.*

   A 0.05

   B 0.06

   C 0.054

   D 0.055

2. Express 0.00408 in standard form
   *Ungkapkan 0.00408 dalam bentuk piawai.*

   A $0.408 \times 10^{-2}$

   B $4.08 \times 10^{-3}$

   C $40.8 \times 10^{-4}$

   D $408 \times 10^{-5}$

3. $0.000056 - 4.7 \times 10^{-6} =$

   A $5.13 \times 10^{-6}$

   B $5.13 \times 10^{-5}$

   C $5.13 \times 10^{5}$

   D $5.13 \times 10^{6}$

4. An empty tank in the shape of cylinder with radius 70 cm and height 100 cm. A student Fill 75% of the tank with water. Calculate the volume, in $cm^3$ of water in the tank.
   *Sebuah tangki kosong yang berbentuk silinder dengan jejari 70 cm dan tinggi 100 cm. Seorang pelajar mengisi 75% daripada tangki itu dengan air. Hitung isipadu, dalam $cm^3$ Air di dalam tangki itu.*

   A $1.155 \times 10^{5}$

   B $1.155 \times 10^{6}$

   C $1.232 \times 10^{6}$

   D $1.232 \times 10^{7}$

5. Given $110110_2 = 2x4_5$, find the value of *x*.
*Diberi* $110110_2 = 2x4_5$, *find the valueof x*

*A 0*

B 1

C 2

D 4

6. $11011_2 - 1101_2$

A $1001_2$

B $1001_2$

C $1101_2$

D $1110_2$

7. In Diagram 1, PQRST is a regular pentagon. TRW is a straight line.

*Dalam Rajah 1, PQRST ialah sebuah pentagon sekata. TRW ialah garis lurus.*

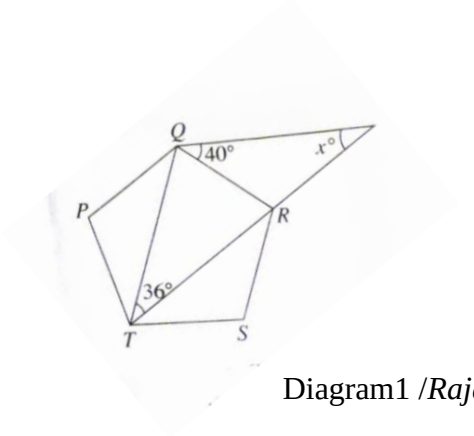



Diagram1 /*Rajah 1*

*Find the value of x.*
*Cari nilai x.*

A 32

B 36

C 54

D 72

8. In Diagram 2, FHG is a tangent to the circle HJK at H.
*Dalam Rajah 2, FHG ialah tangent kepada bulatan HJK di H.*

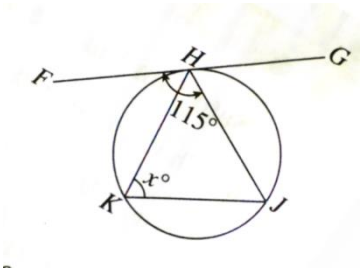



Diagram 2 / *Rajah 2*

Find the value of x.
*Carikan nilai x.*

A 55

B 60

C 65

D 75

9. In Diagram 3, shows four quadrilateral, P, Q, R and S, drawn on square grids.
*Dalam Rajah 3, menunjukkan empat sisi empat, P, Q, R dan S yang dilukis pada grid Segi empat sama.*

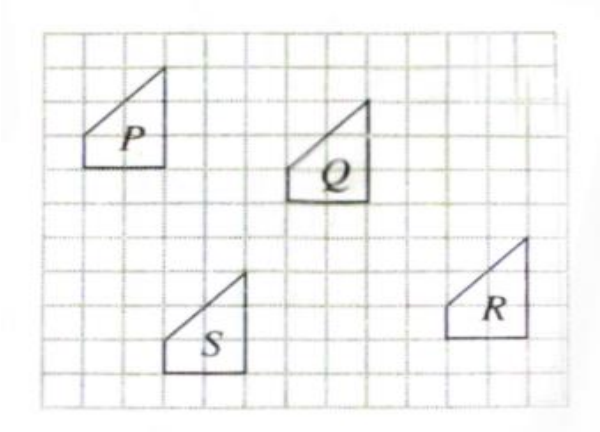
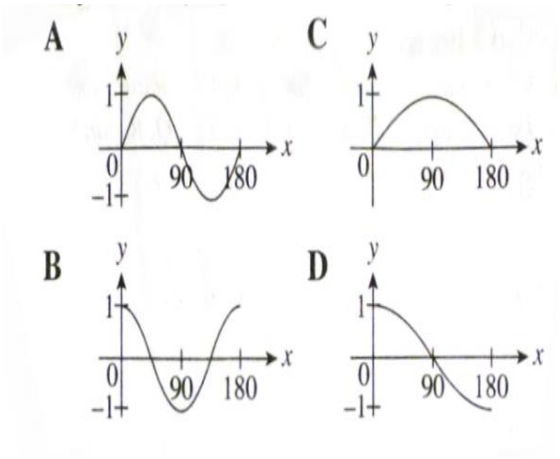



Diagram 3/*Rajah 3*

Which of the following is the correct translation?
*Antara berikut yang manakah ialah translasi yang betul?*

| | Triangle *Segitiga* | Image *Imej* | Translation *Translasi* |
|---|---|---|---|
| A | *P* | *S* | $\begin{pmatrix}2\\6\end{pmatrix}$ |
| B | *Q* | *R* | $\begin{pmatrix}4\\-4\end{pmatrix}$ |
| C | *R* | *Q* | $\begin{pmatrix}-4\\-4\end{pmatrix}$ |
| D | *S* | *P* | $\begin{pmatrix}-2\\-6\end{pmatrix}$ |

10. Which graph represents $y = \sin x^o$ for $0^o \leq x \leq 180^o$?




11. Given that cos $\theta$ =-0.8660 and $180^o \leq \theta \leq 360^o$, find the value of $\theta$.
*Diberi bahawa kos* $\theta = -0.8660$ *dan* $180^o \leq \theta \leq 360^o$, *cari nilai* $\theta$.

*A* $210^o$

B $240^o$

C $300^o$

D $330^o$

12. Diagram 4, MNP is a straight line.
*Rajah 4, MNP ialah garis lurus.*

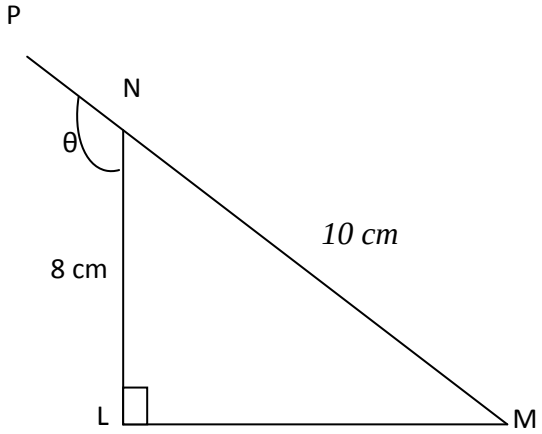



Diagram 4 / *Rajah 4*

*F*ind the value of cos θ.
*Cari nilai cos θ.*

A $-\frac{3}{5}$

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

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

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

13. Diagram 5, shows a cuboid with a horizontal base PQRS.
*Rajah 5, menunjukkan sebuah kuboid dengan tapak mengufuk PQRS.*

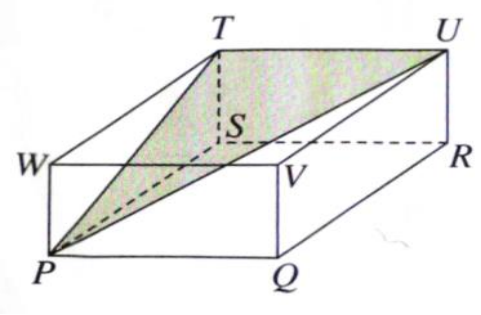



Diagram 5/*Rajah 5*

What is the angle between the plane PTU and the plane RSTU?
*Apakah sudut di antara satah PTU dengan satah RSTU?*

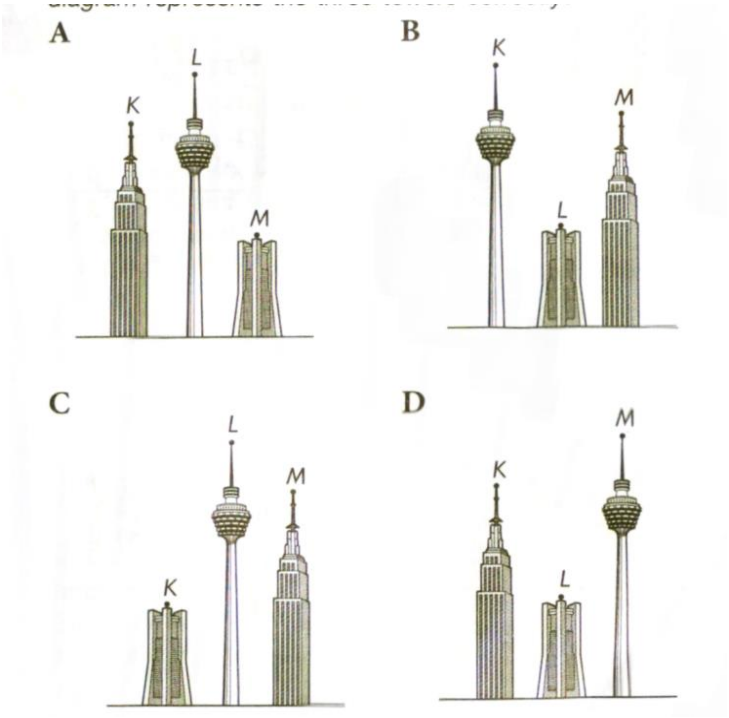
A $\angle PUR$

B $\angle$TPS

C $\angle$ TUP

D $\angle$ PTS

14. Ahmad makes an observation from the top of building M. He observes the top of building L at an angle of elevation and observes the top of building K at an angle of depression. Which diagram represents the three building correctly?
*Ahmad sedang membuat pemerhatian dari puncak bangunan M. Dia memerhatikan Puncak bangunan L dengan suatu sudut dongakan dan memerhatikan puncak bangunan L dengan suatu sudut tunduk. Rajah manakah yang mewakili tiga bangunan itu dengan betul.*



15. In Diagram 6, PQ and RS are two vertical poles on a horizontal plane. The height of RS is three times the height of PQ. The angle of depression of P from R is $38^\circ$.
*Dalam Rajah 6, KL dan MN adalah dua batang tiang tegak di atas satah mengufuk. Tinggi RS adalah tiga kali tinggi PQ. Sudut tunduk P dari R ialah* $38^\circ$.

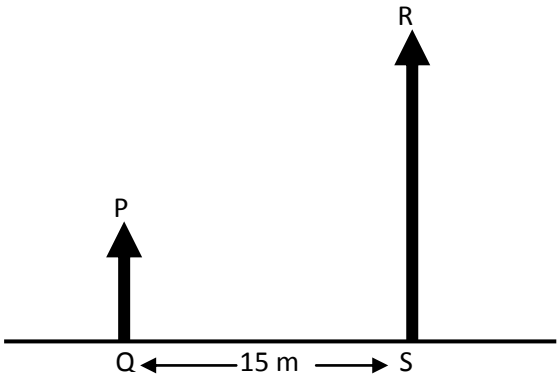



Diagram 6 / *Rajah 6*

Calculate the height, in m, of RS.
*Hitung tinggi, dalam m, puncak RS.*

A 15.65

B 17.58

C 35.16

D 42.58

16. Diagram 7, shows three points K, L and M, on a horizontal plane.
*Dalam rajah 7, menunjukkan tiga titik K, L dan M pada satu satah mengufuk.*

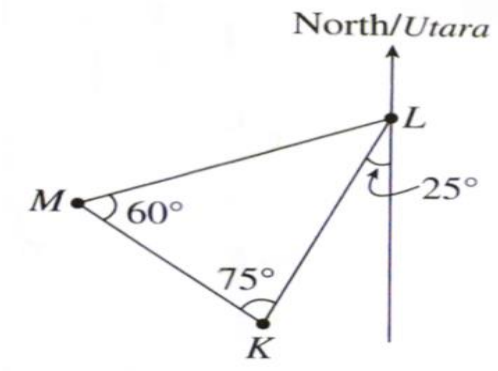



Diagram 7 / *Rajah 7*

Find the bearing of M from L.
*Cari bearing M dari L.*

A 045°

B 135°

C 250°

D 310°

17. P($12^{\circ}S, 20^{\circ}$T), Q and R are three points on the surface of the earth. Q lies due north of P. The difference in latitude between P and Q is $60^{\circ}$. R lies due east of Q. The difference in Longitude between Q and R is $50^{\circ}$. Find the location of R.
*P($12^{\circ}S, 20^{\circ}T$), Q dan R ialah tiga titik pada permukaan bumi. Q terletak ke utara P. Beza latitude antara P dan Q ialah $60^{\circ}$. R terletak ke timur Q. Beza longitude antara Q Dan R ialah $50.^{\circ}$ Cari kedudukan titik R.*

A ($72^{\circ}S, 70^{\circ}$E)
($72^{\circ}S, 70^{\circ}$T)

*B* ($60^{\circ}$N,$30^{\circ}E$)
($60^{\circ}$U,$30^{\circ}T$)

C ($48^{\circ}S, 70^{\circ}E$)
($48^{\circ}S, 70^{\circ}T$)

D ($48^{\circ}N, 70^{\circ}$E)
($48^{\circ}U, 70^{\circ}$T)

18. $(2m-3)^2 - 9(1-m) =$

A $4m^2 + 3$m

B $4m^2 - 3m$

C $4m^2 - 3$m $- 18$

D $4m^2 + 3$m + 18

19. Express $\frac{x-5}{y} - \frac{3x(1-x)}{xy}$ as a single fraction in its simplest form.
*Ungkapkan* $\frac{x-5}{y} - \frac{3x(1-x)}{xy}$ *as a single fraction in its simplest form.*

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

B $\frac{4x-8}{y}$

C $\frac{4x^2-8x}{y}$

D $\frac{-2x^2-2x}{y}$

20. Given that $h^2 - \frac{3h}{k} = 5$ , express *k* in terms of *h.*
*Diberi* $h^2 - \frac{3h}{k} = 5$ , *ungkapkan k dalam sebutan* h.

A $k = \frac{3h}{h^2-5}$

B $k = \frac{h^2-5}{3h}$

C k = $\frac{3h+5}{h^2}$

D k = $\frac{3h-5}{h^2}$

21. Given that $5 - 3(2-z) = 7z - 5$ , find the value of z
*Diberi bahawa* $5 - 3(2-z) = 7z - 5$ , *cari nilai z*

A -2

B -1

C 1

D 2

22. Simplify $2h^4g^8 \div h^{-2}g^3$
Ringkaskan $2h^4g^8 \div h^{-2}g^3$

A $2h^6g^5$

B $2h^{-2}g^{-11}$

C $\frac{1}{2}h^2g^{-11}$

D $\frac{1}{2}h^{-6}q^{-11}$

23. Given that $\frac{1}{p^q} = 27^{-3}$, find the value of p + q.

*Diberi bahawa* $\frac{1}{p^q} = 27^{-3}$, *cari nilai* $p + q$

A 1

B 3

C 24

D 30

24. List all the integers values of x which satisfy the inequalities $x-1 < 7 - \frac{x}{2} \leq x + 4$.

*Senaraikan semua nilai-nilai integer x yang memuaskan ketaksamaan* $x-1 < 7 - \frac{x}{2} \leq x + 4$.

A 3, 4, 5

B 2, 3, 4, 5

C -2, -1, 1, 2, 3, 4, 5

D -2, -1, 0, 1, 2, 3, 4, 5

25. Table 1, show the frequency distribution of the number of motorcycle of a group of Family in Taman Indah Pekan.

*Jadual menunjukkan taburan kekerapan bilangan motosikal bagi sekumpulan keluarga di Taman Indah Pekan .*

| Number of motorcycle *Bilangan motorsikal* | 0 | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| Frequency *Kekerapan* | 5 | 6 | 10 | 6 | 3 | 2 |

Table 1/*Jadual 1*

Find the mean.

*Cari mean.*

A 11

B 2.22

C 2.06

D 2

26. The pictograph in Diagram 8, show the sales of computers of four companies. P, Q, R and S, in January.
*Piktograf dalam rajah 8, menunjukkan jualan komputer bagi empat syarikat, P, Q, R dan S pada bulan January.*

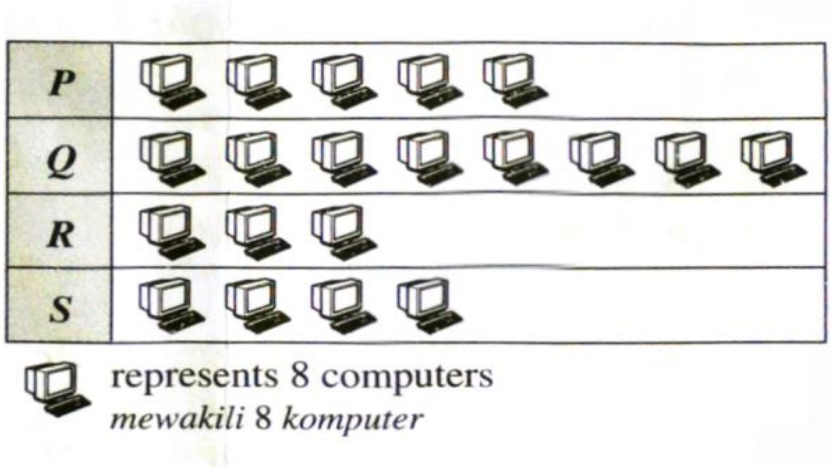



Diagram 8/*Rajah 8*

The total sales of the four companies in Febuary, increase 25% from total sales in January. In Febuary, 48 computers were sold by company P and the sale of company Q were twice of company R. The sales of company R and S were same. Calculate the number of computers sold by company Q in Febuary.
*Jumlah jualan bagi empat syarikat itu pada bulan Febuari meningkat 25% daripada jumlah jualan dalam bulan Januari. Dalam bulan Febuari, 48 buah komputer telah dijual oleh syarikat P dan jualan komputer bagi syarikat Q adalah dua kali ganda jualan bagi syarikat R. Jualan bagi syarikat R sama dengan jualan bagi syarikat S. Hitung bilangan komputer yang dijual oleh syarikat Q pada bulan Febuari.*

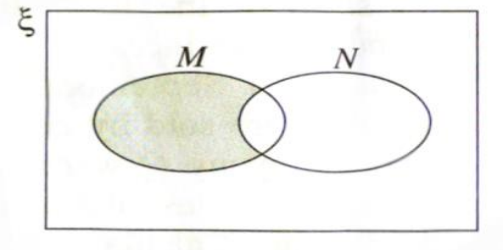
A 24

B 38

C 42

D 76

27. Which of the following represent the shaded region?
*Manakah antara berikut mewakili rantau yang berlorek ?*



A M ∩ $N$
B M ∩ $N'$
C M'∩ $N$
D M'∩ $N'$

28. Given that $n(\text{G}\cap H) = 4, n(G) = 15\ and\ n(H) = 12, find\ n(G \cup H)$.
*Diberi bahawa* $n(\text{G}\cap H) = 4, n(G) = 15\ dan\ n(H) = 12, cari\ n(G \cup H)$.

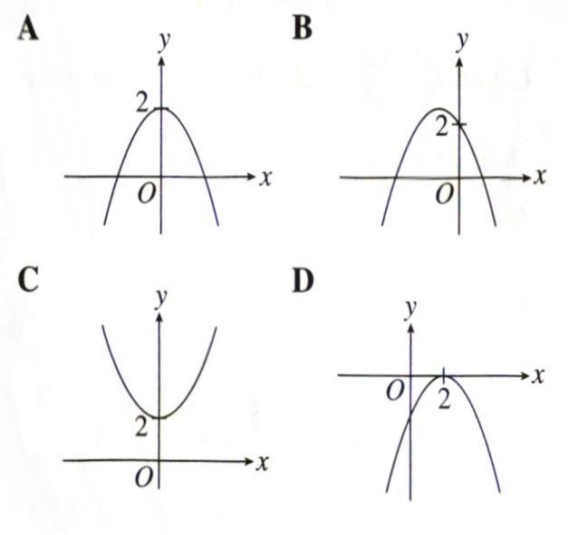
A 19

B 23

C 27

D 31

29. Which graph represents $\gamma = 2 - x^2$?
*Graf manakah yang mewakili* $\gamma = 2 - x^2$?




30. The gradient of the straight line $2x - 5y = 4\ is$
*Kecerunan bagi garis lurus* $2x - 5y = 4$ *ialah*

A 2

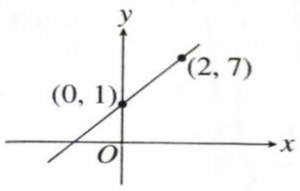
B $\frac{2}{5}$

C $-\frac{2}{5}$

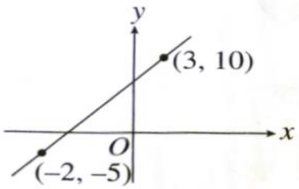
D -2

31. Which of the following graphs does not represent $y = 3x + 1$?
*Antara graf berikut yang manakah tidak mewakili* $y = 3x + 1$*?*

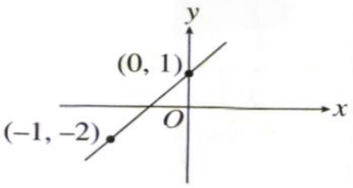
**A**



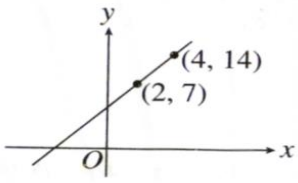

**B**




**C**




**D**




32. Given the equation of a straight line is $3x - 2y = 24$, find the $x\ intercept$ of the straight Line.
*Diberi persamaan bagi satu garis lurus ialah* $3x - 2y = 24$*, cari pintasan* $x$ *bagi garis Lurus itu.*

A -12

B -8

C 8

D 12

33. A bag contains 12 red card, 10 blue card and a number of yellow card. A card is chosen at random from the bag. The probability of choosing a red card is $\frac{1}{2}$. How many yellow card in the bag?
*Sebuah bag mengandungi 12 keping kad merah, 10 keping kad biru dan beberapa keping kad kuning. Kebarangkalian memilih sekeping kad merah ialah* $\frac{1}{2}$*. Berapakah bilangan kad kuning di dalam bag itu?*

A 2

B 12

C 22

D 24

34. Table 2 show the frequency distributon of marks obtained by a group of student in a test.
*Jadual 2 menunjukkan taburan kekerapan markah yang diperolehi sekumpulan pelajar dalam satu ujian.*

| Marks<br>*Markah* | 40 | 50 | 60 | 70 | 80 |
|---|---|---|---|---|---|
| Frequency<br>*Kekerapan* | 5 | 12 | 17 | 13 | 3 |

Table 2/*Jadual 2*

A student is chosen at random from the group of students. Find the probability of choosing a student whose score more than 60 marks.
*Seorang pelajar dipilih secara rawak daripada kumpulan pelajar itu. Cari kebarangkalian memilih seorang pelajar yang memperolehi lebih daripada 60 markah.*

A $\frac{17}{50}$

B $\frac{8}{25}$

C $\frac{16}{25}$

D $\frac{33}{50}$

35. Which table represents the relation of $y \propto x^3$?
*Jadual manakah yang mewakili hubungan $y \propto x^3$?*

A

| $x$ | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| $y$ | 1 | 6 | 9 | 12 |

B

| $x$ | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| $y$ | 1 | 8 | 24 | 72 |

C

| $x$ | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| $y$ | 3 | 12 | 27 | 48 |

D

| $x$ | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| $y$ | 3 | 24 | 81 | 192 |

36. $x$ varies directly as $z$ and inversely as the cube of $y$. Given that the constant of variation is $k$, find the relation between $x, y$ *and* $z$ .
*$x$ berubah secara langsung dengan $z$ dan secara songsang dengan kuasa tiga $y$. Diberi bahawa pemalar ubahan ialah $k$, cari hubungan antara $x, y$ and $z$ .*

A $x = kzy^3$

B $x = \frac{kz}{y^3}$

C $x = \frac{kz}{y}$

D $x = \frac{ky^3}{\sqrt{z}}$

37. Its is given that $y \propto \frac{x}{\sqrt{z}}$ and $y = 12$ when $x = 3$ and $z = 4$. Calculate the value of $x$ when and $z = \frac{1}{4}$ and $y = -16$.
*Diberi bahawa $y \propto \frac{x}{\sqrt{z}}$ dan $y = 12$ bila $x = 3$ dan $z = 4$. Hitung nilai $x$ apabila $z = \frac{1}{4}$ Dan $y = -16$*

A -1

B $\frac{3}{8}$

C $\frac{1}{2}$

D 2

38. $\begin{pmatrix}-3\\2\end{pmatrix}(-4\ -1) =$

A $(10)$

B $(14)$

C $\begin{pmatrix}12 & 3\\-8 & -2\end{pmatrix}$

D $\begin{pmatrix}-12 & -2\\-8 & 3\end{pmatrix}$

39. $\begin{pmatrix}4 & 3\\6 & 1\end{pmatrix}+5\begin{pmatrix}2 & -1\\2 & 3\end{pmatrix}-\begin{pmatrix}-4 & 0\\-1 & 5\end{pmatrix} =$

A $\begin{pmatrix}14 & -2\\15 & 11\end{pmatrix}$

B $\begin{pmatrix}18 & -2\\17 & 11\end{pmatrix}$

C $\begin{pmatrix}18 & -8\\15 & 11\end{pmatrix}$

D $\begin{pmatrix}14 & -8\\17 & 11\end{pmatrix}$

40. Given $(5 \quad 6)\begin{pmatrix}6y\\-y\end{pmatrix} = (8)$

A 3

B $\frac{4}{3}$

C $\frac{3}{4}$

D $\frac{1}{3}$

## INFORMATIONS 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 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 2 to 4.
   *Satu senarai rumus disediakan di halaman 2 hingga 4.*

8. A booklet of four-figure mathematical tables is provided.
   *Sebuah buku sifir matematik empat angka disediakan.*

9. You may use a scientific calculator.
   *Anda dibenarkan menggunakan kalkulator saintifik.*

**END OF QUESTION PAPER**
***KERTAS SOALAN TAMAT***

Type equation here.