

SULIT

1449/1

1449/1

MATEMATIK

Kertas 1

Ogos

2011

$1\frac{1}{4}$ jam



**BAHAGIAN PENGURUSAN
SEKOLAH BERASRAMA PENUH DAN SEKOLAH KECEMERLANGAN
KEMENTERIAN PELAJARAN MALAYSIA**

**PEPERIKSAAN PERCUBAAN
SIJIL PELAJARAN MALAYSIA
TINGKATAN 5 2011**

MATEMATIK

Kertas 1

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 Bahasa Melayu.*
3. *Calon dikehendaki membaca maklumat di halaman 2.*

Kertas soalan ini mengandungi 30 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 $a^m \times a^n = a^{m+n}$

10 $P(A) = \frac{n(A)}{n(S)}$

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

11 $P(A') = 1 - P(A)$

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

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

12 $m = \frac{y_2 - y_1}{x_2 - x_1}$

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

13 $m = -\frac{y - \text{intercept}}{x - \text{intercept}}$

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

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

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

14 Pythagoras Theorem
Teorem Pithagoras
 $c^2 = a^2 + b^2$

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

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

Min = $\frac{\text{Hasil tambah nilai data}}{\text{Bilangan data}}$

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

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



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 = $2\pi rt$
- 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 = $\pi r^2 t$
- 8 Volume of cone = $\frac{1}{3} \pi r^2 h$
Isipadu kon = $\frac{1}{3} \pi r^2 t$
- 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 = $(n - 2) \times 180^\circ$
Hasil tambah sudut pedalaman poligon = $(n - 2) \times 180^\circ$

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

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

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

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

14 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 6 346.2 correct to three significant figures.

Bundarkan 6 346.2 betul kepada tiga angka bererti.

- A 6 350.0
- B 6 350
- C 6340
- D 635

- 2 $3.14 \times 10^{-5} - 1.3 \times 10^{-6} =$

- A 1.84×10^{-5}
- B 1.84×10^{-6}
- C 3.01×10^{-5}
- D 3.01×10^{-6}

- 3 $\frac{4.88 \times 10^9}{0.0004} =$

- A 1.22×10^{13}
- B 1.22×10^{-13}
- C 1.22×10^5
- D 1.22×10^{-5}

- 4 A container consist of 50 boxes of goods. If each box can hold 3.7×10^5 kg of goods, find the total weight of the container.

Sebuah kontena mengandungi 50 kotak barang. Jika berat sebuah kotak ialah 3.7×10^5 kg, cari jumlah berat kontena tersebut.

- A 1.85×10^5
- B 1.85×10^7
- C 1.85×10^8
- D 1.85×10^{20}

- 5 Express 334_5 as a number in base ten.

Ungkapkan 334_5 sebagai nombor dalam asas sepuluh.

- A 90
B 94
C 450
D 470
- 6 $110011_2 + 1111_2$
A 100000_2
B 100010_2
C 1000000_2
D 1000010_2

- 7 Diagram 7 shows a hexagon $PQRSTU$.

Rajah 7 menunjukkan heksagon $PQRSTU$.

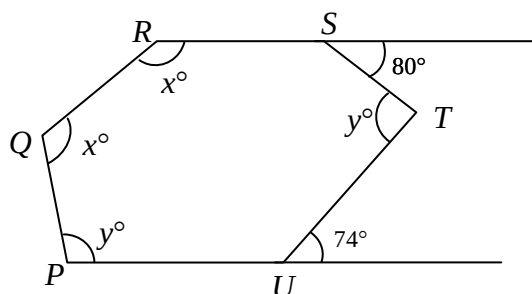


Diagram 7
Rajah 7

Find the value of $x + y$

Cari nilai $x + y$

- A 132°
B 257°
C 334°
D 514°

- 8 In Diagram 8, JKL is an isosceles triangle.

Dalam Rajah 8, JKL ialah segi tiga sama kaki.

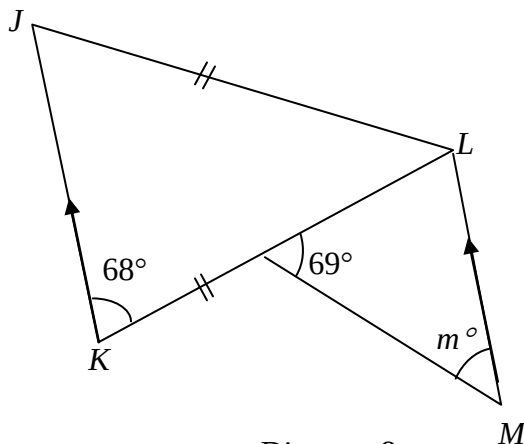


Diagram 8
Rajah 8

The value of m is

Nilai m ialah

- A 41°
- B 43°
- C 53°
- D 55°

- 9 Diagram 9 shows a circle, QST , centre O . PQR is a tangent to the circle at Q .

Rajah 9 menunjukkan sebuah bulatan, QST , berpusat O . PQR adalah tangent kepada bulatan tersebut di titik Q .

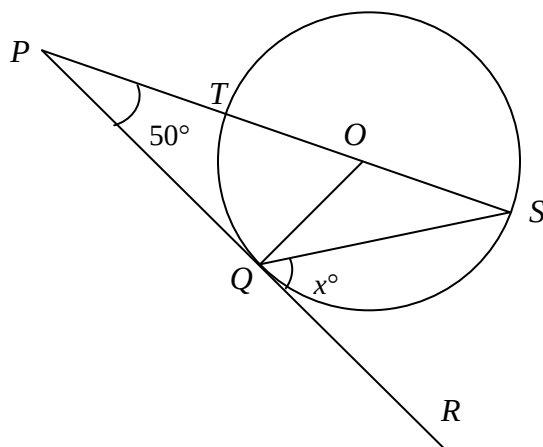


Diagram 9
Rajah 9

The value of x is

Nilai x ialah

- A 20°
- B 40°
- C 50°
- D 70°

- 10 Diagram 10 shows two triangles, P and Q , drawn on square grids.

Rajah 10 menunjukkan dua buah segi tiga P dan Q , dilukis pada grid segi empat sama.

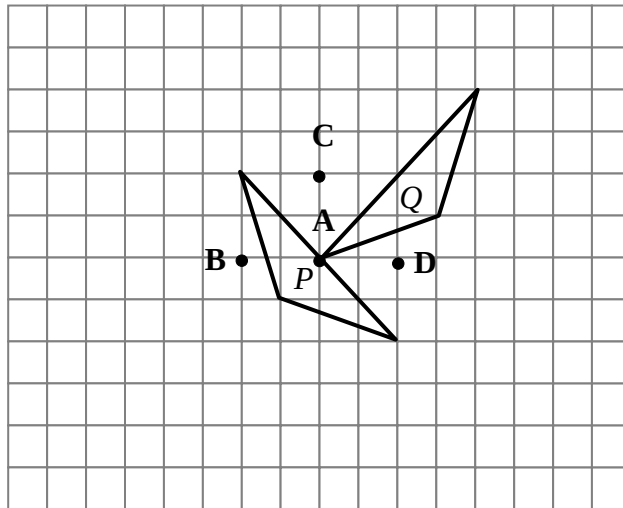


Diagram 10

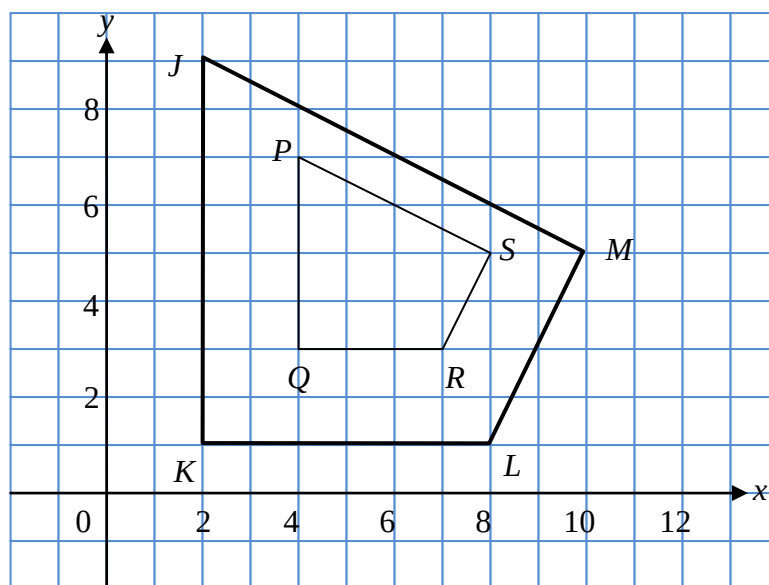
Rajah 10

Q is the image of P under an anticlockwise rotation of 90° .
Which of the points, A , B , C or D , is the centre of the rotation?

*Q ialah imej bagi P di bawah satu putaran 90° lawan arah jam.
Antara titik-titik A , B , C dan D , yang manakah pusat putaran itu?*

- 11 In Diagram 11, quadrilateral $PQRS$ is the image of quadrilateral $JKLM$ under an enlargement.

Dalam Rajah 11, sisi empat $PQRS$ ialah imej bagi sisi empat $JKLM$ di bawah satu pembesaran tertentu.



The centre of the enlargement is

Pusat pembesaran ialah

- A (7, 5)
- B (6, 4)
- C (6, 5)
- D (7, 4)

12 In Diagram 12, EFG is a straight line.

Dalam Rajah 12, EFG ialah satu garis lurus.

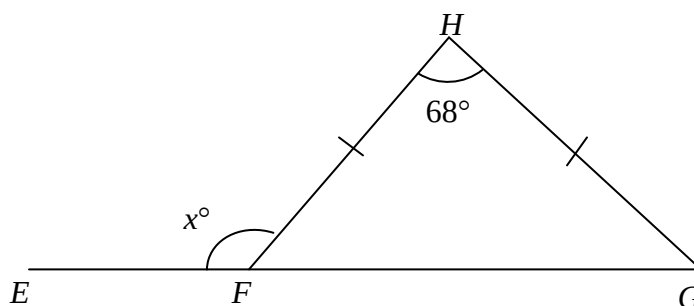


Diagram 12

Rajah 12

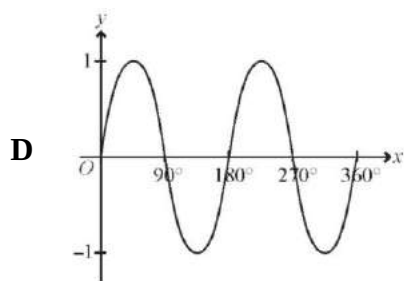
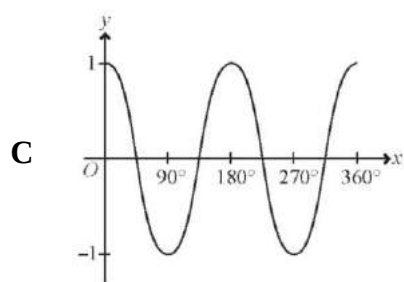
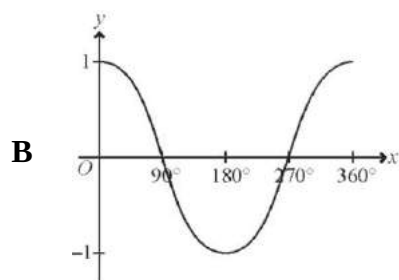
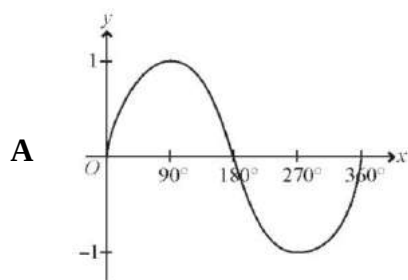
Given that $\angle FHG = 68^\circ$, find the value of $\tan x^\circ$.

Diberi $\angle FHG = 68^\circ$, cari nilai bagi $\tan x^\circ$.

- A -2.475
- B -1.483
- C 1.483
- D 2.475

13 Which of the following graphs represents $y = \cos 2x^\circ$ for $0^\circ \leq x \leq 360^\circ$?

Antara graf yang berikut, manakah mewakili $y = \cos 2x^\circ$ untuk $0 \leq x \leq 360^\circ$?



- 14 Diagram 14 shows a cuboid with a horizontal base $JKLM$.

Rajah 14 menunjukkan sebuah kuboid dengan tapak mengufuk $JKLM$.

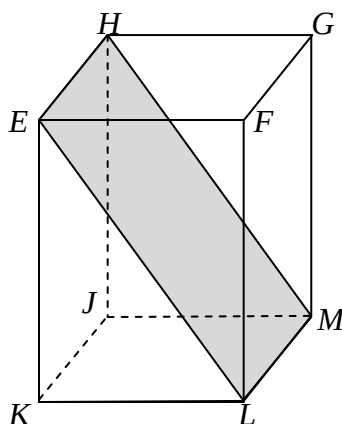


Diagram 14

Rajah 14

Name the angle between the planes $ELMH$ and $EHJK$.

Namakan sudut di antara satah $ELMH$ dengan satah $EHJK$

- A $\angle JHM$
- B $\angle FEL$
- C $\angle HLJ$
- D $\angle ELK$

- 15 In Diagram 15, EF is a vertical pillar on a horizontal plane.

Dalam Rajah 15, EF ialah satu tiang tegak pada satu satah mengufuk.

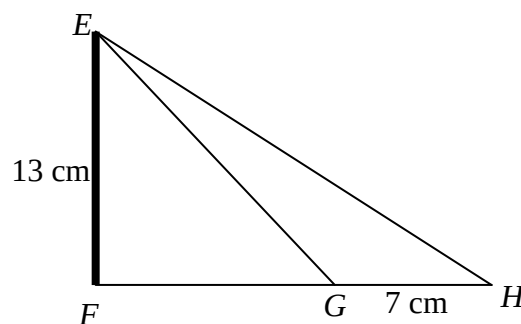


Diagram 15

Rajah 15

The angle of elevation E from H is 40° .

Calculate the angle of depression of G from E .

Sudut dongakan E dari H ialah 40° .

Hitungkan sudut tunduk G dari E .

- A $16^\circ 44'$
- B $33^\circ 9'$
- C $56^\circ 51'$
- D $73^\circ 16'$

- 16 In Diagram 16, JL and NM are two vertical poles on a horizontal plane. K is a point on JL such that $KL = NM$.

Dalam Rajah 16, JL dan NM ialah tiang tegak pada satu satah mangufuk. K ialah satu titik pada JL dengan keadaan $KL = NM$.

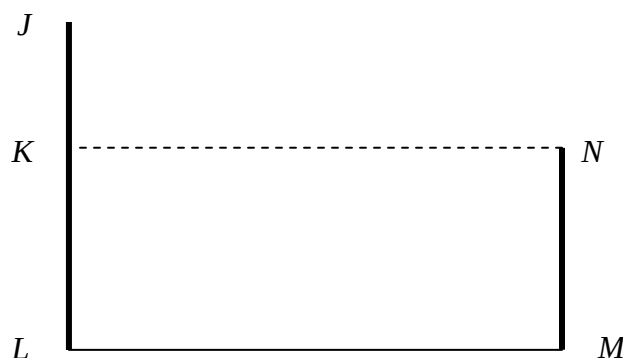


Diagram 16
Rajah 16

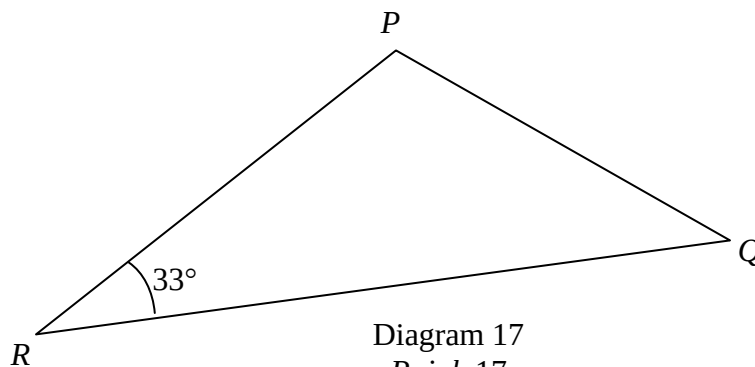
The angle of depression of N from J is

Sudut tunduk N dari J ialah

- A $\angle JNK$
- B $\angle JMK$
- C $\angle NJK$
- D $\angle MJK$

- 17 Diagram 17 shows three points, P , Q and R , on horizontal plane. Q is due east of P .

Rajah 17 menunjukkan tiga titik P , Q dan R , yang terlentang pada suatu satah mengufuk. Q berada di timur P .



Given bearing R from Q is 230° .
Find the bearing R from P .

*Diberi bearing R dari Q ialah 230° .
Cari bearing R dari P .*

- A 017°
- B 107°
- C 197°
- D 214°

- 18 In Diagram 18, NGS is the Greenwich Meridian and PQ is the diameter of a parallel latitude.

Dalam Rajah 18, NGS ialah Meridian Greenwich dan PQ ialah diameter selarian latitude.

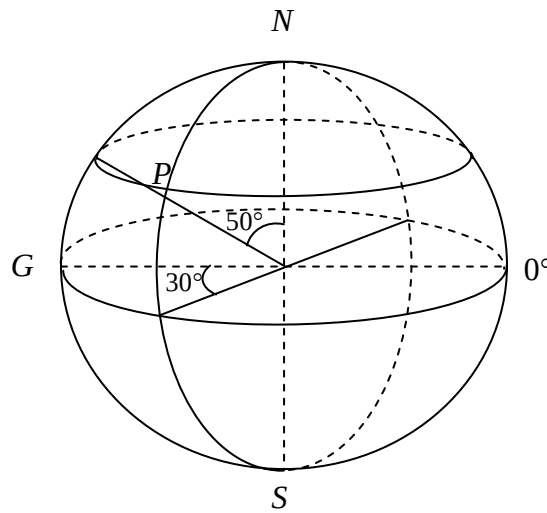


Diagram 18

Rajah 18

Find the position of point Q.

Cari kedudukan titik Q.

- A (50°N, 150° W)
(50°U, 150° B)
- B (40°N, 150° E)
(40°U, 150° T)
- C (50°N, 150° E)
(50°U, 150° T)
- D (40°N, 150° W)
(40°U, 150° B)

19 $3p^2 - 19p + 6 =$

A $(3p - 1)(p - 6)$

B $(3p - 6)(p + 1)$

C $(3p - 6)(p - 1)$

D $(3p + 1)(p - 6)$

20 Express $\frac{2}{a-1} - \frac{2}{3a}$ as a single fraction in its simplest form.

Ungkapkan $\frac{2}{a-1} - \frac{2}{3a}$ sebagai satu pecahan tunggal dalam bentuk termudah.

A $\frac{4a+1}{3a(a-1)}$

B $\frac{4a-1}{3a(a-1)}$

C $\frac{2(2a+1)}{3a(a-1)}$

D $\frac{2}{3a}$

21 Given that $k = \frac{2l}{3l+1}$, express l in terms of k .

Diberi bahawa $k = \frac{2l}{3l+1}$, ungkapkan l dalam sebutan k .

A $\frac{k}{3k-2}$

B $\frac{k}{2-3k}$

C $\frac{3k-2}{k}$

D $\frac{2-3k}{k}$



22 $(2k - 3)^2 + 4k(k - 4) =$

A $8k^2 - 28k + 9$

B $8k^2 - 20k + 9$

C $8k^2 - 16k - 7$

D $8k^2 - 12k - 7$

23 Simplify $\frac{(g^3h^5)^2}{h^{10}}$

Ringkaskan $\frac{(g^3h^5)^2}{h^{10}}$

A g^5h^{10}

B g^5h^{-3}

C g^6h

D g^6

24 Evaluate $(3^4 \times 5^{10})^{\frac{1}{5}} \div (9^2 \times 125^{-4})$

Nilaikan $(3^4 \times 5^{10})^{\frac{1}{5}} \div (9^2 \times 125^{-4})$.

A $(\sqrt[5]{3})^{16} \times 5^{14}$

B $\frac{1}{(\sqrt[5]{3})^{16}} \times 5^{14}$

C $\frac{1}{(\sqrt[16]{3})^5} \times 5^{14}$

D $(\sqrt[16]{3})^5 \times 5^{14}$

- 25 The solution for $x \leq 2x - \frac{1}{4}$ is

Penyelesaian bagi $x \leq 2x - \frac{1}{4}$ ialah

A $x \geq \frac{1}{4}$

B $x \leq \frac{1}{4}$

C $x \leq \frac{1}{2}$

D $x \geq \frac{1}{2}$

- 26 List all the integers values of x that satisfy both simultaneous linear inequalities
 $4x - 5 < 7$ and $5 - x \leq 6$

*Senaraikan semua nilai integer bagi x yang memenuhi kedua-dua ketaksamaan linear
 $4x - 5 < 7$ dan $5 - x \leq 6$*

A $-1, 0, 1, 2, 3$

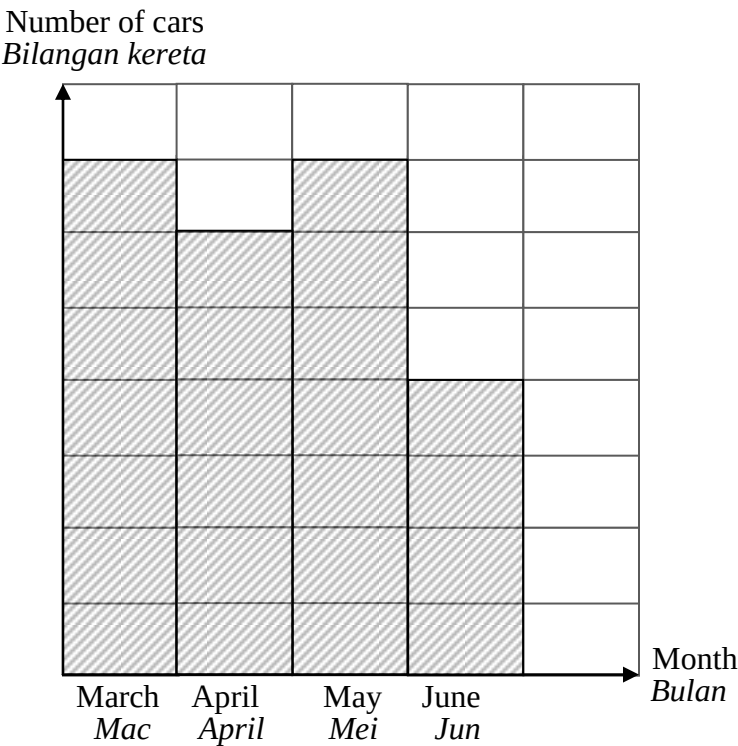
B $-1, 0, 1, 2,$

C $0, 1, 2, 3$

D $-1, 1, 2$

- 27 Diagram 27 is a histogram chart which shows the sales of cars for March, April, May and June.

Rajah 27 ialah histogram yang menunjukkan jualan kereta bagi bulan Mac, April, Mei dan Jun.



The sales during the four months, from March to June is 600 cars.
How many cars being sold in April?

*Jualan sepanjang empat bulan itu, dari bulan Mac hingga bulan Jun ialah 600 kereta.
Berapakah bilangan kereta dijual pada bulan April*

- A 60
- B 70
- C 100
- D 150



- 28 The pie chart in Diagram 28 shows the favourite drink flavours of 720 pupil.

Carta pai dalam Rajah 28 menunjukkan perisa minuman yang digemari oleh 720 murid.

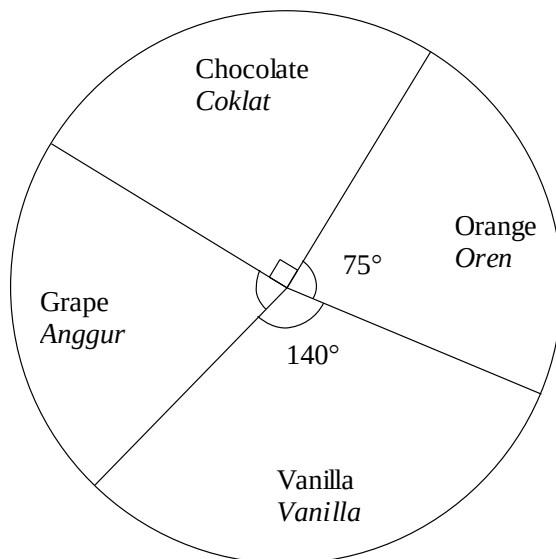


Diagram 28
Rajah 28

Calculate the difference between the number of children who like chocolate flavour drink and that of grape.

Hitungkan beza antara bilangan kanak-kanak yang suka minuman perisa coklat dan bilangan kanak-kanak yang suka perisa anggur.

- A 55
- B 70
- C 110
- D 190

29 Table 29 shows the score of a group of students in a mathematics quiz.

Jadual 2 menunjukkan skor bagi sekumpulan pelajar dalam satu kuiz matematik.

Score <i>Skor</i>	0	1	2	3	4
Frequency <i>Kekerapan</i>	9	10	7	6	8

Table 29
Jadual 29

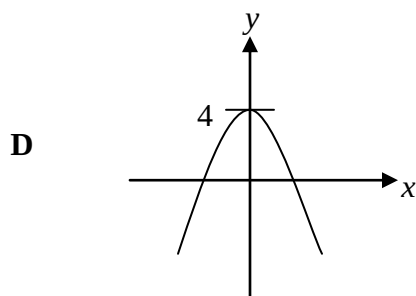
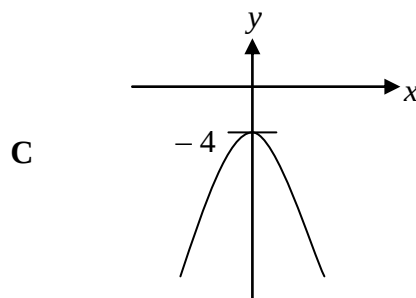
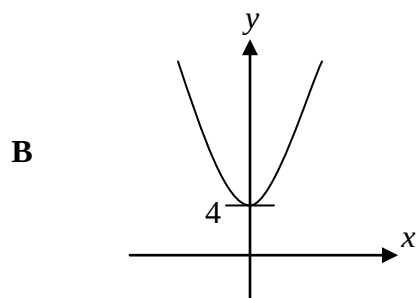
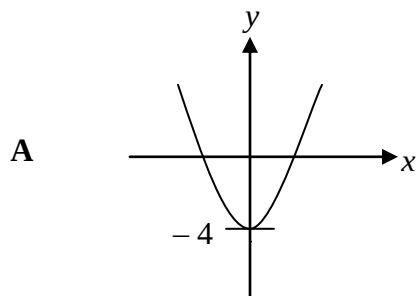
Find the median score.

Cari median skor itu.

- A 0
- B 1
- C 1.5
- D 2

30 Which of the following graphs represents $y = 4 - x^2$

Antara berikut, graf manakah yang menunjukkan $y = 4 - x^2$



- 31 Diagram 31 is a Venn diagram showing set P and set Q .

Rajah 31 ialah gambarajah Venn menunjukkan set P dan set Q .

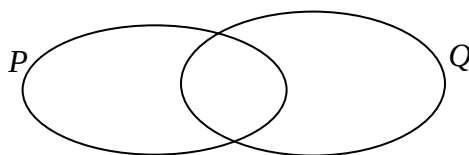


Diagram 31

Rajah 31

It is given that the universal set, $\xi = P \cup Q$, $n(P) = 15$, $n(Q) = 12$ and $n(P \cup Q) = 22$.

Find the value of $n(P \cap Q)$

Diberi bahawa set semesta $\xi = P \cup Q$, $n(P) = 15$, $n(Q) = 12$ dan $n(P \cup Q) = 22$.

Cari nilai $n(P \cap Q)$

- A 10
B 7
C 5
D 3
- 32 If the number of subset P is 32, find $n(P)$.
Jika bilangan subset P ialah 32, cari $n(P)$.
A 4
B 5
C 8
D 16
- 33 Determine the x -intercept of the straight line $3x + 2y + 12 = 0$
Tentukan pintasan- x bagi garis lurus $3x + 2y + 12 = 0$
A - 6
B - 4
C 4
D 6

- 34 Find the gradient that joint the points $(-8, 0)$ and $(0, 4)$.

Cari kecerunan garis yang menghubungkan titik $(-8, 0)$ dan titik $(0, 4)$.

A -2

B $-\frac{1}{2}$

C $\frac{1}{2}$

D 2

- 35 There are 64 students in Account Class. The probability of picking a student who wears spectacles at random is $\frac{5}{8}$.

Find the number of students who do not wear spectacles in the class.

Terdapat 64 pelajar dalam Kelas Akaun. Kebarangkalian memilih seorang pelajar yang memakai cermin mata secara rawak ialah $\frac{5}{8}$.

Cari bilangan pelajar yang tidak memakai cermin mata dalam kelas itu.

A 24

B 36

C 40

D 48

- 36 Given that the probability of team P to win in a first match and second match are $\frac{1}{5}$, and $\frac{3}{5}$ respectively.

Find the probability of team P to lose in both matches.

Diberi kebarangkalian pasukan P memenangi pertandingan pertama dan kedua masing-masing ialah $\frac{1}{5}$ dan $\frac{3}{5}$.

Cari kebarangkalian pasukan P kalah dalam kedua-dua pertandingan itu.

A $\frac{22}{25}$

B $\frac{8}{25}$

C $\frac{6}{25}$

D $\frac{3}{25}$

- 37 Table 37 shows some values of the variables P and Q .

Jadual 37 menunjukkan beberapa nilai bagi pemboleh ubah P dan Q .

P	31	279
Q	2	m

Table 37

Jadual 37

It is given that P varies inversely as the square of Q .

Find the value of m .

Diberi bahawa P berubah secara songsang dengan kuasa dua Q .

Cari nilai m .

A $\frac{2}{3}$

B $\frac{3}{2}$

C $\frac{9}{4}$

D $\frac{4}{9}$

- 38 P varies directly to the cube root of X and inversely as Y . Given that the constant is k , find the relation between P , X and Y .

P berubah secara langsung dengan punca kuasa tiga X dan secara songsang dengan Y . Diberi k ialah pemalar, cari hubungan antara P , X dan Y .

A $P = \frac{k X^3}{Y}$

B $P = \frac{k X^{\frac{1}{3}}}{Y}$

C $P = k X^{\frac{1}{3}} Y$

D $P = \frac{k Y^3}{X}$

39 $\frac{1}{2} \begin{pmatrix} 4 & 6 \\ -2 & 0 \end{pmatrix} - \begin{pmatrix} 2 & -5 \\ 3 & 7 \end{pmatrix} =$

A $\begin{pmatrix} 0 & 8 \\ -4 & -7 \end{pmatrix}$

B $\begin{pmatrix} 2 & 11 \\ -5 & 7 \end{pmatrix}$

C $\begin{pmatrix} 2 & 11 \\ -4 & -7 \end{pmatrix}$

D $\begin{pmatrix} 6 & 7 \\ 1 & -7 \end{pmatrix}$

40 Given $(2k \ 3) \begin{pmatrix} 1 & -2 \\ 4 & k \end{pmatrix} = (10 \ 1)$. Find the value of k .

A -1

B 1

C 8

D 11

END OF QUESTION PAPER
KERTAS SOALAN TAMAT

NAMA :

TINGKATAN :

SULIT

1449/2

Matematik

Kertas 2

Ogos 2011

$2\frac{1}{2}$ jam



**BAHAGIAN PENGURUSAN
SEKOLAH BERASRAMA PENUH DAN SEKOLAH KECEMERLANGAN
KEMENTERIAN PELAJARAN MALAYSIA**

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MATEMATIK

Kertas 2

Dua jam tiga puluh minit

**JANGAN BUKA KERTAS SOALAN INI
SEHINGGA DIBERITAHU**

1. Kertas soalan ini mengandungi dua bahagian : **Bahagian A** dan **Bahagian B**. Jawab semua soalan daripada **Bahagian A** dan empat soalan dalam **Bahagian B**.
2. Jawapan hendaklah ditulis dengan jelas dalam ruang yang disediakan dalam kertas soalan. Tunjukkan langkah-langkah penting. Ini boleh membantu anda untuk mendapatkan markah.
3. Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan.
4. Satu senarai rumus disediakan di halaman 2, 3 dan 4
5. Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogram.

Pemeriksa			
Bahagian	Soalan	Markah Penuh	Markah Diperoleh
A	1	3	
	2	4	
	3	4	
	4	3	
	5	4	
	6	5	
	7	6	
	8	5	
	9	6	
	10	6	
	11	6	
B	12	12	
	13	12	
	14	12	
	15	12	
	16	12	
JUMLAH		100	

Kertas soalan ini mengandungi 29 halaman bercetak.

**[Lihat halaman sebelah
SULIT**

SULIT

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

10 $P(A) = \frac{n(A)}{n(S)}$

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

11 $P(A') = 1 - P(A)$

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

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

12 $m = \frac{y_2 - y_1}{x_2 - x_1}$

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

13 $m = -\frac{y - \text{intercept}}{x - \text{intercept}}$

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

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

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

14 Pythagoras Theorem
Teorem Pithagoras
 $c^2 = a^2 + b^2$

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

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

Min = $\frac{\text{Hasil tambah nilai data}}{\text{Bilangan data}}$

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

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

**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 = $(n - 2) \times 180^\circ$
Hasil tambah sudut pedalaman poligon = $(n - 2) \times 180^\circ$

SULIT

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

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

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

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

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

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

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

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

SULIT

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For
Examiner's
Use

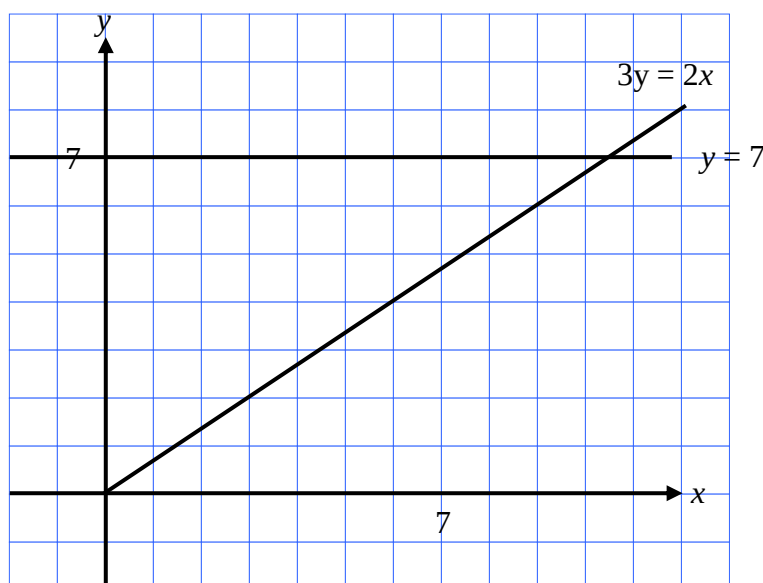
Section A
[52 marks]
[52 markah]

Answer **all** questions in this section.
Jawab **semua** soalan dalam bahagian ini.

- 1** On the graph in the answer space, shade the region which satisfies the three inequalities $y \leq 7$, $3y \geq 2x$ and $x + y > 7$

Pada graf di ruang jawapan, lorekkan rantau yang memuaskan ketiga-tiga ketaksamaan $y \leq 7$, $3y \geq 2x$ dan $x + y > 7$

Answer / Jawapan:



[3 marks]
[3 markah]

For
Examiner's
Use

SULIT

1449/2

2

Solve the following quadratic equation:

Selesaikan persamaan kuadrat yang berikut:

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

[4 marks]

[4 markah]

Answer / Jawapan:

3

Calculate the value of r and of s that satisfy the simultaneous linear equations:

Hitungkan nilai r dan s yang memuaskan persamaan linear serentak berikut:

$$5r + 4s = 1$$

$$2r - 5s = 7$$

[4 marks]

[4 markah]

Answer / Jawapan:

1449/2

-
- Diagram 4

Diagram 4
Rajah 4

Hitung sudut antara satah ABF dan satah $ABCD$.

[3 marks]
[3 *markah*]

Answer / Jawapan:

SULIT

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- 5 (a) Diagram 5 shows a solid cylinder. Two identical solid cones is taken out from the cylinder.

Rajah 5 menunjukkan sebuah pepejal berbentuk silinder. Dua buah pepejal berbentuk kon dikeluarkan daripada silinder itu.

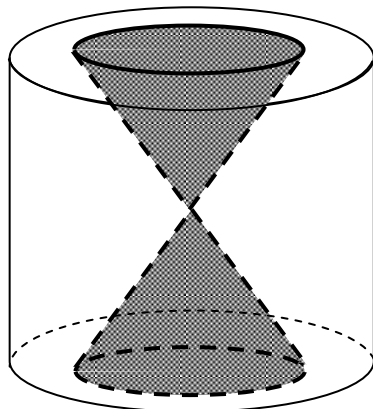


Diagram 5
Rajah 5

The diameter and the height of the cylinder is of the cylinder is 28 cm and 30 cm respectively. The diameter of the cone is 14 cm.

Using $\pi = \frac{22}{7}$, calculate the volume, in cm^3 , of the remaining solid.

*Diameter dan tinggi silinder masing-masing adalah 28 cm dan 30 cm.
Diameter kon itu ialah 14 cm.*

Menggunakan $\pi = \frac{22}{7}$, hitung isi padu, dalam cm^3 , bagi pepejal yang tinggal itu.

[4 marks]

[4 markah]

Answer / Jawapan:

SULIT

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For
Examiner's
Use

- 6 (a) State whether the sentence below is a statement or non-statement.

Nyatakan sama ada ayat berikut adalah pernyataan atau bukan pernyataan.

“2 is a prime number”

“2 ialah nombor perdana”

- (b) Write down two implications based on the following sentence.

Tulis dua implikasi berdasarkan ayat berikut.

“ $P \subset R$ if and only $R' \subset P'$ ”

“ $P \subset R$ jika dan hanya jika $R' \subset P'$ ”

- (c) Make a general conclusion, by induction for the sequence of numbers 2, 11, 26, 47,... which follows the following pattern.

Buat satu kesimpulan umum secara aruhan bagi urutan nombor 2, 11, 26, 47,... yang mengikut pola berikut.

$$3 \times 1 - 1 = 2$$

$$3 \times 4 - 1 = 11$$

$$3 \times 9 - 1 = 26$$

$$3 \times 16 - 1 = 47$$

.....

.....

[5 marks]

[5 markah]

Answer / Jawapan:

(a)

(b)

(c)

SULIT

1449/2

- 7 In Diagram 7, O is the origin. Straight lines PQ is parallel to RS . Straight line QS is parallel to x -axis. The equation of straight line RS is $2y = 4x - 22$.

Dalam Rajah 7, O ialah asalan. Garis lurus PQ adalah selari dengan garis lurus RS . Garis lurus QS adalah selari dengan paksi- x . Persamaan garis lurus RS ialah $2y = 4x - 22$

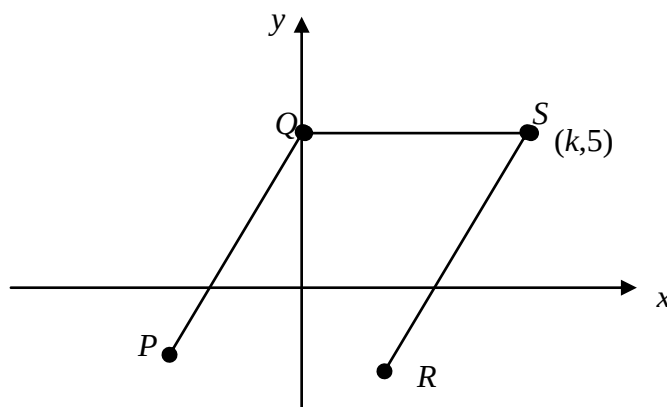


Diagram 7
Rajah 7

- (a) Find the value of k ,
Cari nilai k ,
- (b) Find the equation of straight line PQ . Hence, state its coordinates of x -intercept.
Cari persamaan bagi garis lurus PQ . Seterusnya nyatakan koordinat pintasan- x bagi garis lurus itu..

[6 marks]

[6 markah]

Answer / Jawapan:

(a)

(b)

SULIT

1449/2

For
Examiner's
Use

- 8 Diagram 8 shows 4 cards labelled with letters.
Rajah 8 menunjukkan 4 keping kad berlabel dengan huruf.

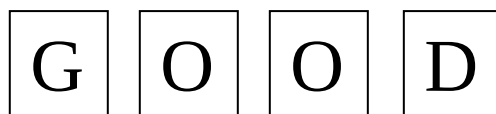


Diagram 8
Rajah 8

Two cards are chosen at random from the box, one by one, without replacement.

Dua keping kad dipilih secara rawak daripada kotak itu, satu demi satu, tanpa dikembalikan.

- (a) List the sample space ,
Senaraikan ruang sampel.
- (b) Find the probability that
Carikan kebarangkalian bahawa
- (i) At least one card chosen is labelled G.
Sekurang-kurangnya satu kad yang dipilih berlabel G.
- (ii) Both cards chosen are labelled with same letter.
Kedua-dua kad yang dipilih berlabel dengan huruf yang sama.

[5 marks]

[5 markah]

Answer / *Jawapan:*

(a)

(b) (i)

(ii)

- 9 In Diagram 9, $OPQR$ is sector of a circle with centre O , $PQSO$ is sector of a circle with centre P and QRO is a quadrant of a circle.

Dalam Rajah 9, $OPQR$ ialah sektor kepada bulatan berpusat O , $PQSO$ ialah sektor kepada bulatan berpusat P dan QRO ialah sukuan bulatan.

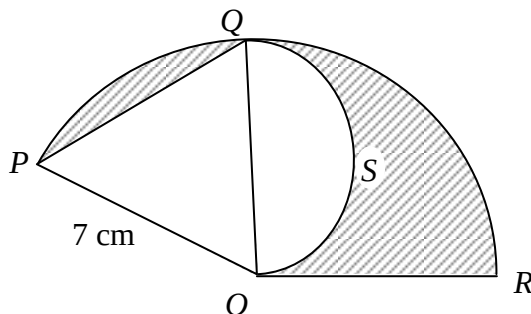


Diagram 9
Rajah 9

Calculate
Hitungkan

[Use/ Guna $\pi = \frac{22}{7}$]

- (a) Perimeter, in cm, of the whole diagram.
Perimeter, dalam cm, seluruh rajah itu.
- (b) Area, in cm^2 , of the shaded region.
Luas, dalam cm^2 , kawasan yang berlorek.

[6 marks]
[6 markah]

Answer / Jawapan:

(a)

(b)

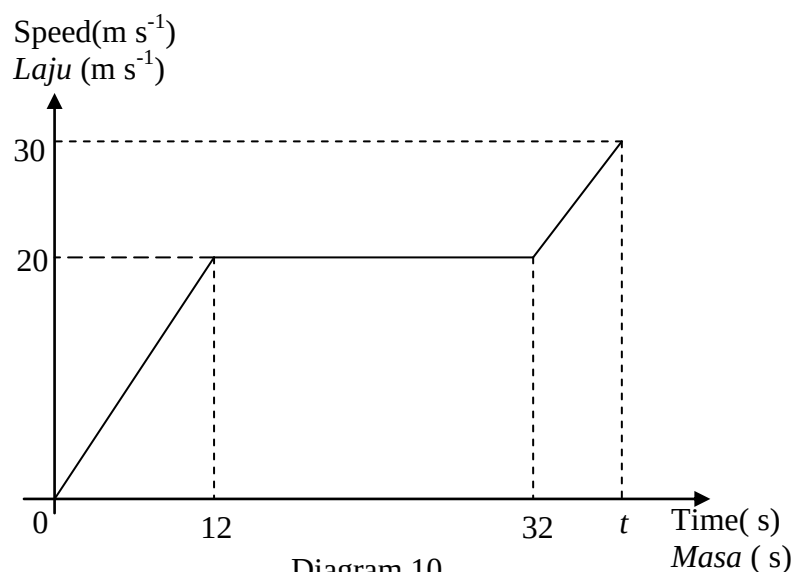
SULIT

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For
Examiner's
Use

- 10 (a) Diagram 10 shows a speed-time graph for the movement of a particle for a period of t seconds.

Rajah 10 menunjukkan graf laju-masa bagi pergerakan suatu zarah dalam tempoh t saat.



- (a) Find the distance travel by the particle when it moves with the uniform speed.
Carikan jarak yang dilalui oleh zarah bila ia bergerak dengan laju seragam.
- (b) Calculate the rate of change of speed, in m s^{-2} , in the first 12 seconds.
Hitungkan kadar perubahan laju, dalam m s^{-2} , dalam tempoh 12 saat yang pertama.
- (c) Calculate the value of t , if the total diatance travelled for the period of t seconds is 620 meters.

Hitungkan nilai t , jika jumlah jarak yang dilalui dalam tempoh t saat itu ialah 620 meter.

[6 marks]
[6 markah]

Answer / Jawapan:

- (a)
- (b)
- (c)

- 11 (a) The inverse matrix of $\begin{pmatrix} 6 & -2 \\ 4 & -1 \end{pmatrix}$ is $m \begin{pmatrix} -1 & n \\ -4 & 6 \end{pmatrix}$. Find the value of m and of n .

Matriks songsang bagi $\begin{pmatrix} 6 & -2 \\ 4 & -1 \end{pmatrix}$ ialah $m \begin{pmatrix} -1 & n \\ -4 & 6 \end{pmatrix}$. Cari nilai m dan nilai n .

[2 marks]

[2 markah]

- (b) Using matrices, calculate the value of x and of y that satisfy the following simultaneous linear equations:

Menggunakan kaedah matriks, hitung nilai x dan nilai y yang memuaskan persamaan matriks berikut.

$$6x - 2y = 9$$

$$4x - y = 5$$

[4 marks]

[4 markah]

Answer / Jawapan:

(a)

(b)

SULIT

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For
Examiner's
Use

Section B
Bahagian B
[48 marks]
[48 markah]

Answer any **four** questions from this section.
Jawab mana-mana empat soalan dalam bahagian ini.

- 12 (a) Complete Table 12 in the answer space for the equation $y = -x^2 - x + 9$ by writing down the values of y when $x = -3$ and $x = 1$.

Lengkapkan Jadual 12 di ruang jawapan bagi persamaan $y = -x^2 - x + 9$ dengan menulis nilai-nilai y apabila $x = -3$ dan $x = 1$.

[2 marks]

[2 markah]

- (b) For this part of the question, use the graph paper provided.

You may use a flexible curve ruler.

By using a scale of 2 cm to 1 unit on the x -axis and 2 cm to 2 unit on the y -axis, draw the graph of $y = -x^2 - x + 9$ for $-3 \leq x \leq 4$.

Untuk ceraian soalan ini, gunakan kertas graf yang disediakan.

Anda boleh menggunakan pembaris fleksibel.

Dengan menggunakan skala 2 cm kepada 1 unit pada paksi- x dan 2 cm kepada 2 unit pada paksi- y , lukis graf $y = -x^2 - x + 9$ bagi $-3 \leq x \leq 4$.

[4 marks]

[4 markah]

- (c) From your graph, find
Daripada graf anda, cari

(i) the value of y when $x = 0.5$,
nilai y apabila $x = 0.5$,

(ii) the value of x when $y = 4$.
nilai x apabila $y = 4$.

[2 marks]

[2 markah]

- (d) Draw a suitable straight line on your graph to find the values of x which satisfy the equation $x^2 - 4 = 2x$ for $-3 \leq x \leq 4$
State these values of x .

*Lukis satu garis lurus yang sesuai pada graf anda untuk mencari nilai-nilai x yang memuaskan persamaan $x^2 - 4 = 2x$ bagi $-3 \leq x \leq 4$
Nyatakan nilai-nilai x itu.*

[4 marks]

[4 markah]

For
Examiner's
Use

SULIT

1449/2

Answer / Jawapan:

(a)

x	-3	-2	-1	0	1	2	3	4
y	3	7		9	7	3		-11

Table 12
Jadual 12

(b) Refer graph on page 17.
Rujuk graf di halaman 17.

(c) (i) $y = \dots\dots\dots$

(ii) $x = \dots\dots\dots$

(d) The equation of the straight line :
Persamaan garis lurus:

$\dots\dots\dots$

$x = \dots\dots\dots, \dots\dots\dots$

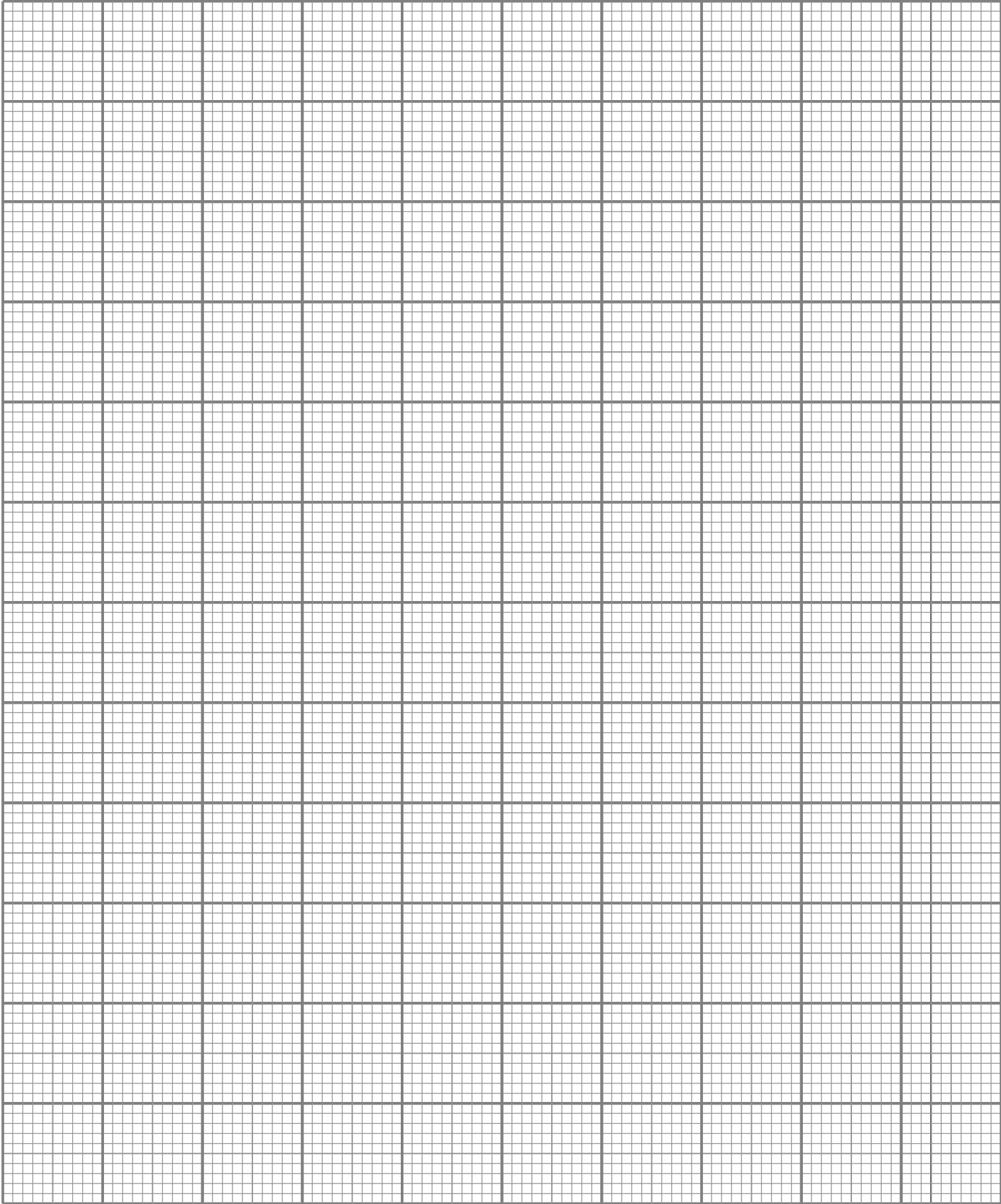


SULIT

Graph for Question 12
Graf untuk Soalan 12

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*For
Examiner's
Use*



- 13 (a)** Transformation **T** is a translation $\begin{pmatrix} -2 \\ 3 \end{pmatrix}$.

Transformation **P** is a reflection in the line $y = 3$.

Transformation **R** is a clockwise rotation of 90° about the centre $(0, k)$.

*Penjelmaan **T** ialah translasi $\begin{pmatrix} -2 \\ 3 \end{pmatrix}$*

*Penjelmaan **P** ialah pantulan pada garis $y = 3$*

*Penjelmaan **R** ialah putaran 90° ikut arah jam pada pusat $(0, k)$.*

- (i) The point $(3, 1)$ is the image of the point $(-3, 1)$ under the transformation **R**. State the value of k .

*Titik $(3, 1)$ ialah imej bagi titik $(-3, 1)$ di bawah penjelmaan **R**. Nyatakan nilai k .*

- (ii) Find the coordinates of the image of point $(4, 2)$ under the following combined transformations.

Cari koordinat imej bagi titik $(4, 2)$ di bawah gabungan penjelmaan berikut.

(a) **T**²

(b) **PT**

[4 marks]

[4 markah]

Answer / Jawapan:

(a) (i)

(ii) (a)

(b)

SULIT

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For
Examiner's
Use

- (b) Diagram 13 shows three pentagons, $ABCDE$, $AJRQP$ and $AKLMN$ are drawn on a Cartesian plane.

Rajah 13 menunjukkan tiga pentagon, $ABCDE$, $AJRQP$, dan $AKLMN$ dilukis pada suatu satah Cartesan.

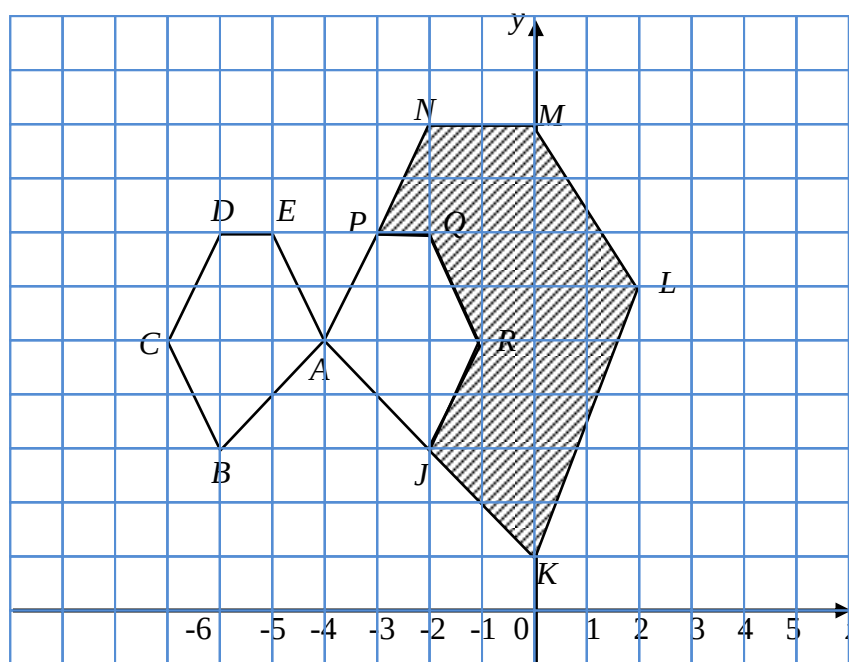


Diagram 13

Rajah 13

Pentagon $AJRQP$ is the image of pentagon $ABCDE$ under a transformation V and pentagon $AKLMN$ is the image of pentagon $AJRQP$ under a transformation W .

Pentagon $AJRQP$ ialah imej bagi pentagon $ABCDE$ di bawah penjelmaan V dan pentagon $AKLMN$ ialah imej bagi pentagon $AJRQP$ di bawah penjelmaan W .

- (i) Describe in full the transformations :

Huraikan selengkapnya penjelmaan :

(a) V

(b) W

- (ii) It is given that the area of shaded region is 150 cm^2 .
Calculate the area of the pentagon $ABCDE$ in cm^2 .

*Diberi bahawa luas kawasan berlorek ialah 150 cm^2 .
Hitung luas bagi pentagon $ABCDE$, dalam cm^2 .*

[8 marks]

[8 markah]

For
Examiner's
Use

SULIT

1449/2

Answer / Jawapan:

(b) (i) (a)

(b)

(ii)

SULIT

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For
Examiner's
Use

- 14 The data in Diagram 14 shows the number of apples bought by 40 customers on Tuesday.
Data dalam Rajah 14 menunjukkan bilangan buah epal yang dibeli oleh 40 pelanggan pada hari Selasa .

54	52	38	39	45	37	32	20
25	40	43	21	48	28	38	51
23	36	44	26	35	42	35	25
39	23	34	31	29	26	53	46
38	31	28	41	37	31	47	33

Diagram 14
Rajah 14

- (a) Based on the data in Diagram 14 , complete Table 14 in the answer space.
Berdasarkan data di Rajah 14 , lengkapkan jadual di dalam ruangan jawapan.
[4 marks]
[4 markah]

- (b) Based on the Table 14 in (a),
Berdasarkan jadual 14 dalam (a),

- (i) state the modal class,
nyatakan kelas mod,

[1 mark]
[1 markah]

- (ii) calculate the mean number of apples bought by customers on that day.

Hitung min bilangan buah epal yang dibeli oleh pelanggan pada hari tersebut.
[3 marks]
[3 markah]

- (c) For this part of the question, use graph paper provided.

Untuk ceraian soalan ini, gunakan kertas graf yang disediakan.

Using the scale of 2 cm to 5 apples on the horizontal axis and 2 cm to 1 customer on the vertical axis, draw a frequency polygon for the data.

Menggunakan skala 2 cm kepada 5 biji epal pada paksi mengufuk dan 2 cm kepada seorang pelanggan pada paksi mencancang, lukis poligon kekerapan bagi data tersebut.

[4 marks]
[4 markah]

SULIT

Answer / Jawapan:

(a)

Number of apples <i>Bilangan buah epal</i>	Midpoint <i>Titik tengah</i>	Frequency <i>Kekerapan</i>
20 – 24		

Table 14
Jadual 14

(b) (i)

(ii)

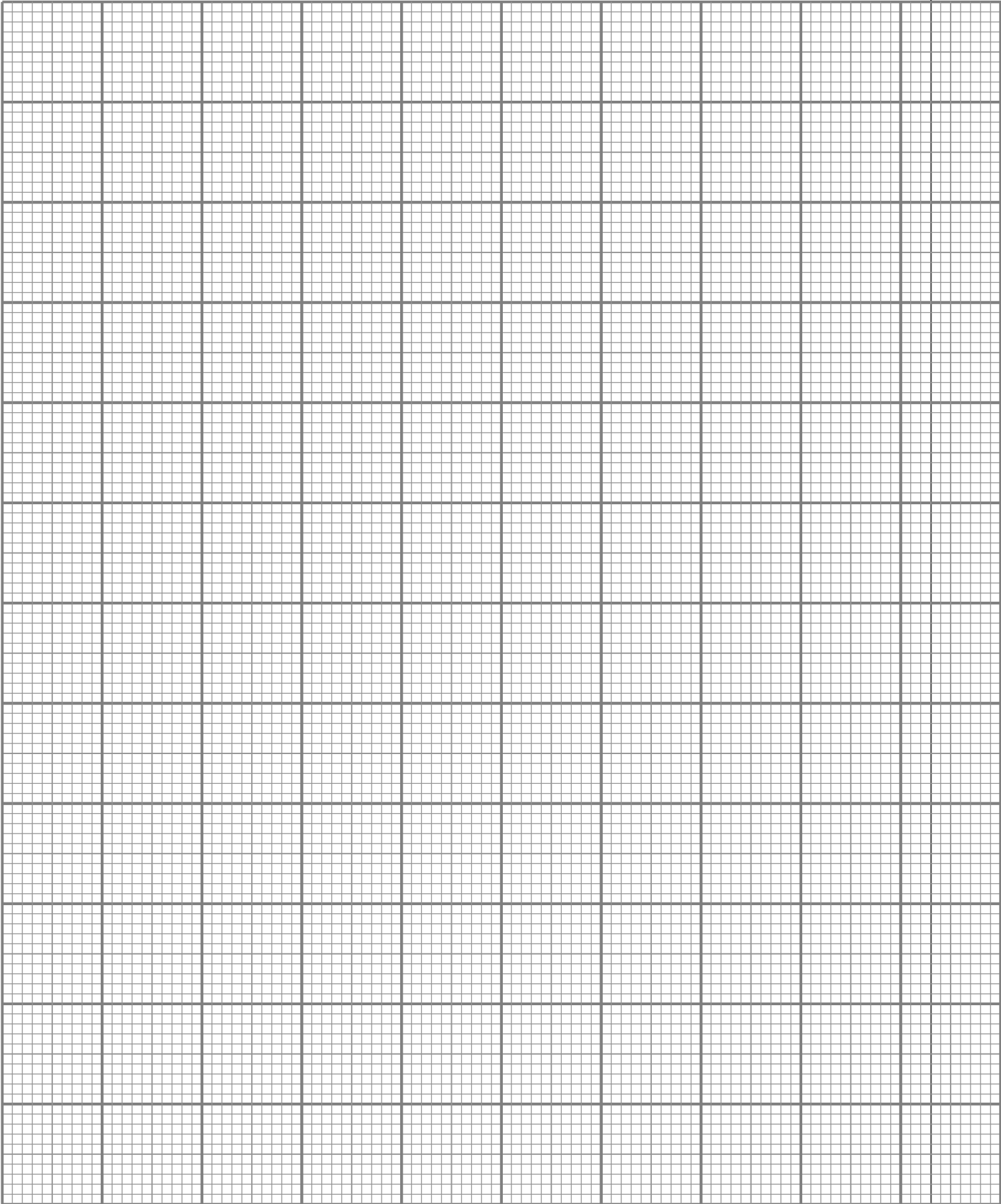
(c) Refer to the graph on page 23
Rujuk graf di halaman 23

SULIT

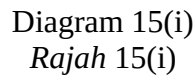
Graph for Question 13
Graf untuk Soalan 13

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*For
Examiner's
Use*



- Rajah 15(i) menunjukkan sebuah pepejal berbentuk prisma tegak dengan tapak segi empat JKLM terletak di atas meja. Permukaan ALMHED ialah keratan rentas seragamnya. Segiempat tepat ABCD and EFGH ialah satah mengufuk. Tepi AL, HM dan DE adalah tegak.



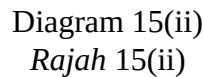
Lukiskan dengan skala penuh, dongakan pepejal itu pada satah mencancang yang selari dengan LM sebagaimana dilihat dari X.

Answer/ Jawapan

(a)

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- Trapezium KJUT ialah keratan rentas seragam prisma itu dan UJQR ialah suatu satah condong. Tapak KJPQ ialah satah segiempat sama. Segiempat tepat RSTU ialah satah mengufuk. B ialah titik tengah TK. $TU = SR = BC$. Tapak PQJMLK terletak pada satah mengufuk. Tepi SP adalah tegak.



[5 marks]
[5 markah]

For
Examiner's
Use

SULIT

Answer / Jawapan:

(b) (i)

(ii)

SULIT

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For
Examiner's
Use

- 16** $P(50^{\circ}\text{S}, 120^{\circ}\text{E})$ and Q are two points on the surface of the earth such that PQ is the diameter of the earth.

$P(50^{\circ}\text{S}, 120^{\circ}\text{T})$ dan Q ialah dua titik di permukaan bumi dengan keadaan PQ ialah diameter bumi.

- (a) State the latitude of Q .

Nyatakan latitud bagi Q .

[2 marks]

[2 markah]

- (b) Given that PR is the diameter of a parallel of latitude, state the location of R .

Diberi PR ialah diameter selarian latitud, nyatakan kedudukan bagi R .

[2 marks]

[2 markah]

- (c) Calculate the shortest distance, in nautical miles, from P to R .

Hitungkan jarak terdekat, dalam batu nautika, dari P ke R .

[3 marks]

[3 markah]

- (d) An aeroplane took off from P and flew due west along its parallel of latitude with an average speed of 600 knots. The aeroplane took 2 hours to reach at point T .

Sebuah kapal terbang berlepas dari P arah ke barat di sepanjang selarian latitud sepunya dengan laju purata 600 knot. Kapal terbang itu mengambil masa 2 jam untuk sampai ke satu titik T .

Calculate

Hitungkan

- (i) the distance, in nautical miles, from P to T .

jarak, dalam batu nautika, dari P ke T .

- (ii) the longitude of T .

longitud bagi T .

[5 marks]

[5 markah]

For
Examiner's
Use

SULIT

1449/2

Answer / Jawapan:

(a)

(b)

(c)

(d) (i)

(ii)

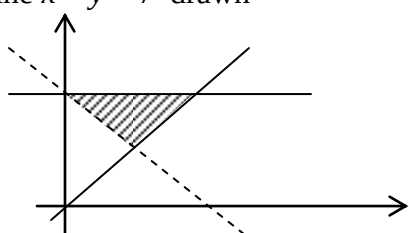
**END OF QUESTION PAPER
KERTAS SOALAN TAMAT**



INFORMATION FOR CANDIDATES

1. This question paper consists of two sections: **Section A** and **Section B**.
2. Answer **all** questions in **Section A** and **four** questions from **Section B**.
3. Write your answers in the spaces provided in the question paper.
4. Show your working. It may help you to get marks.
5. If you wish to change your answer, cross out the answer that you have done. Then write down the new answer.
6. The diagrams in the questions provided are not drawn to scale unless stated.
7. The marks allocated for each question and sub-part of a question are shown in brackets.
8. A list of formulae is provided on page 2 to 3.
9. A booklet of four-figure mathematical tables is provided.
10. You may use a non-programmable scientific calculator.
11. Hand in this question paper to the invigilator at the end of the examination.

SKEMA PEMARKAHAN KERTAS 2

No.	PEMARKAHAN	MARKAH	JUMLAH
1	Line $x + y = 7$ drawn  Correct region shaded Note: Solid line $x + y = 7$ drawn (minus 1 mark)	K1 N2	
3.	$3x^2 + 11x - 4 = 0$ $(3x - 1)(x + 4) = 0$ $x = \frac{1}{3}, -4$	K1 K1 N1, N1	4
3	$10r + 8s = 2$ or equivalent $33s = -33$ or equivalent $r = 1, s = -1$	K1 K1 N1 N1	4
4	$\angle FAD$ seen $\tan \angle FAD = \frac{5}{8}$ $\angle FAD = 32^\circ$	P1 K1 N1	3
5	$\frac{22}{7} \times 14 \times 14 \times 30$ $\frac{1}{3} \times \frac{22}{7} \times 7 \times 7 \times 15$ $\frac{22}{7} \times 14 \times 14 \times 30 - 2(\frac{1}{3} \times \frac{22}{7} \times 7 \times 7 \times 15)$ 16940	K1 K1 K1 N1	4
6	a) Statement b) If $P \subset R$ then $R' \subset P'$ If $R' \subset P'$ then $P \subset R$ c) $3n^2 - 1, n = 1, 2, 3, \dots$	P1 P1 P1 P1, P1	5

SKEMA MATEMATIK PEPERIKSAAN PERCUBAAN SPM SBP 2011

7	a	$10 = 4k - 22$ $k = 8$	K1 N1 K1N1	6
	b	$y = 2x + 5$ $0 = 2x + 5$ $x = -\frac{5}{2}$ coordinates of x-intercept is $(-\frac{5}{2}, 0)$	K1 N1	
8	(a)	$S = \{(GO_1), (GO_2), (GD), (O_1G), (O_1O_2), (O_1D), (O_2G), (O_2O_1), (O_2D), (DG), (DO_1), (DO_2)\}$	K1	5
	(b)	(i) $\frac{6}{12}$ or $\frac{1}{2}$ Note: Without listing in (a) or working- NO	N2	
		(ii) $\frac{2}{12}$ or $\frac{1}{6}$ Note: Without listing in (a) or working- NO	N2	
9	(a)	$\frac{150}{360} \times 2 \times \frac{22}{7} \times 7$ $(\frac{150}{360} \times 2 \times \frac{22}{7} \times 7) + 7 + 7$ $32\frac{1}{3}$ or 32.33	K1 K1 N1	6
	(b)	$\frac{150}{360} \times \frac{22}{7} \times 7^2$ or $\frac{60}{360} \times \frac{22}{7} \times 7^2$ $\frac{150}{360} \times \frac{22}{7} \times 7^2 - \frac{60}{360} \times \frac{22}{7} \times 7^2$ $38\frac{1}{2}$ or 38.5	K1 K1 N1	

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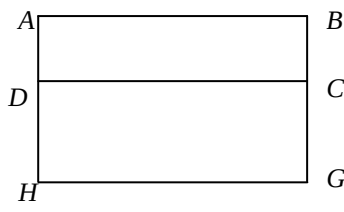
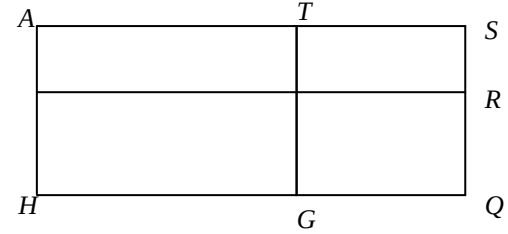
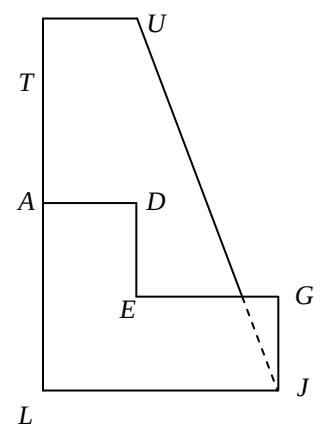
10	(a) 400 (b) $\frac{20}{12}$ 1.67 (c) $\frac{1}{2}(20+32)20 + \frac{1}{2}(20+30)(t-32) = 620$ $t = 36$	P1 K1 N1 K2 N1	6
11	a $m = \frac{1}{2}, n = 2$ b $\begin{pmatrix} 6 & -2 \\ 4 & -1 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 9 \\ 5 \end{pmatrix}$ $\begin{pmatrix} x \\ y \end{pmatrix} = \frac{1}{2} \begin{pmatrix} -1 & 2 \\ -4 & 6 \end{pmatrix} \begin{pmatrix} 9 \\ 5 \end{pmatrix}$ $x = \frac{1}{2}, y = -3$	N1 N1 P1 K1 N1N1	6

12	(a) <table border="1"> <tr> <td>x</td> <td>-1</td> <td>3</td> </tr> <tr> <td>y</td> <td>9</td> <td>-3</td> </tr> </table> (b) <u>Graph</u> Axes drawn in the correct direction , the uniform scale is in the range given. 8 coordinates plotted correctly in the range given. Smooth curve drawn continuously in the range without a straight line at any part and passed through 9 correct coordinates . (c) (i) $y = 8.2 \pm 0.2$ (ii) $x = -2.8 \pm 0.1, 1.8 \pm 0.1$ (d) Identify the equation $y = -3x + 5$ or equivalent. Draw the line $y = -3x + 5$ $x = 3.2 \pm 0.1 , -1.2 \pm 0.1$	x	-1	3	y	9	-3	K1K1 K1 K2 N1 P1 P1 K1 K1 N1 N1	12
x	-1	3							
y	9	-3							

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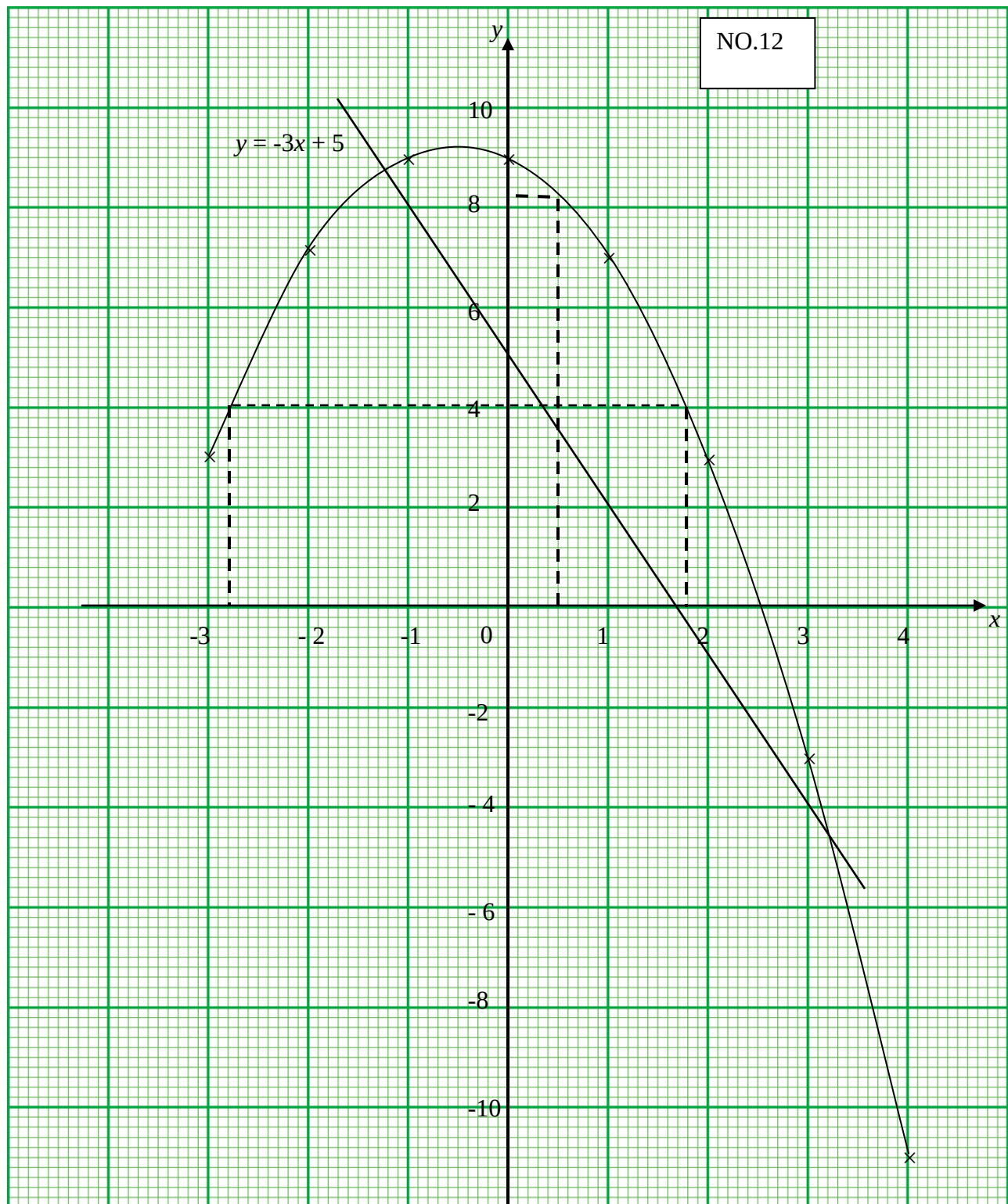
13	(a)	(i) $k = -2$	K1	
		(ii) (a) (0, 8)	N1	
		(b) (2, 1)	N2	
	(b)	(i) (a) V is a reflection in the line $x = -3$	P2	
		(b) W is an enlargement with scale factor of 2 at the centre of A (-3, 4)	P3	
		(ii) $2^2 \times x = x + 150$	K1	
		$3x = 150$	N1	
		$x = 50$ or equivalent	N1	12

14	(a)	<table><tr><th>Class interval <i>Selang kelas</i></th><th>Midpoint <i>Titik tengah</i></th><th>Frequency <i>Kekerapan</i></th></tr><tr><td>20 – 24</td><td>22</td><td>4</td></tr><tr><td>25 – 29</td><td>27</td><td>7</td></tr><tr><td>30 – 34</td><td>32</td><td>6</td></tr><tr><td>35 – 39</td><td>37</td><td>10</td></tr><tr><td>40 – 44</td><td>42</td><td>5</td></tr><tr><td>45 – 49</td><td>47</td><td>4</td></tr><tr><td>50 – 54</td><td>52</td><td>4</td></tr></table> Column I Column II Column III	Class interval <i>Selang kelas</i>	Midpoint <i>Titik tengah</i>	Frequency <i>Kekerapan</i>	20 – 24	22	4	25 – 29	27	7	30 – 34	32	6	35 – 39	37	10	40 – 44	42	5	45 – 49	47	4	50 – 54	52	4	P1 P1 P2	
Class interval <i>Selang kelas</i>	Midpoint <i>Titik tengah</i>	Frequency <i>Kekerapan</i>																										
20 – 24	22	4																										
25 – 29	27	7																										
30 – 34	32	6																										
35 – 39	37	10																										
40 – 44	42	5																										
45 – 49	47	4																										
50 – 54	52	4																										
	(b) (i) 35 - 39																											
	(ii) $\frac{4(22) + 7(27) + 6(32) + 10(37) + 5(42) + 4(47) + 4(52)}{40}$ $\frac{1445}{40}$ $36.125 \text{ or } 36\frac{1}{8}$	K2																										
			N1																									
	(c) Axes drawn in the correct direction , the uniform scale is in the range given.		K1																									
	7 points plotted correctly		K2																									
	Close polygon shape drawn through 6 points and point (17,0) and (57,0)		N1																									
				12																								

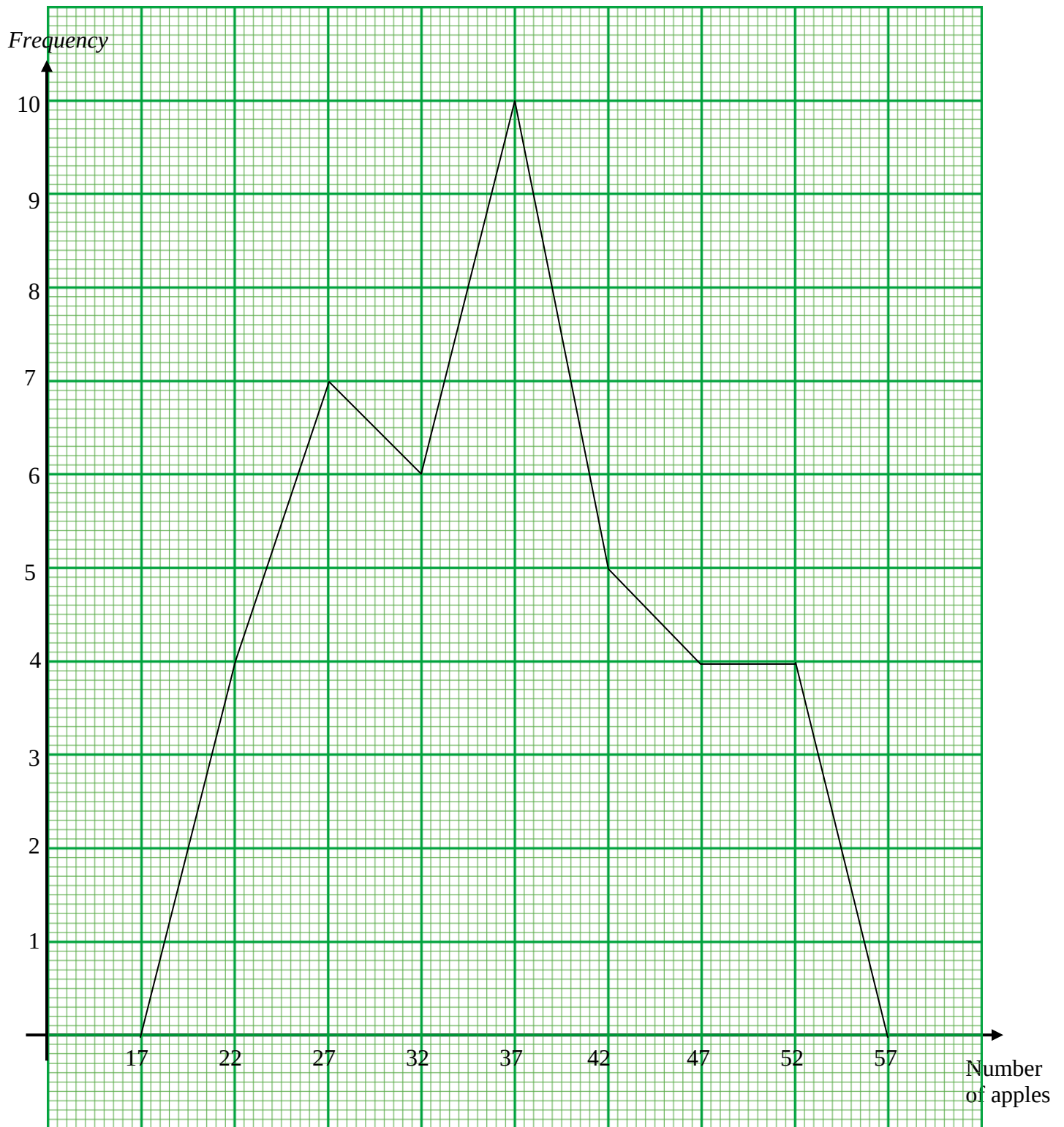
15	(a)  Correct shape of two rectangles $AD = BC < DH = CG < AB = HG$ Correct measurement ± 0.2 cm (b)  Correct shape of four rectangles $AH = TS = SQ < AT = HG$ Correct measurement ± 0.2 cm (c)  Correct shape of two hexagons. Dotted line $TU = AD < EG < LA = AT < UG$ Correct measurement ± 0.2 cm	K1 K1 N1 K1 K1 N2 K1 K1 K1 N1	12
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SKEMA MATEMATIK PEPERIKSAAN PERCUBAAN SPM SBP 2011

16(a)	$50^{\circ} N$	P1 P1	
(b)	$(50^{\circ}S, 60^{\circ}W)$	P1 P1	
(c)	$(40+40) 60$ 4800 n.m.	K1 K1 N1	
(d)	(i) 600×2 1200 n.m.	K1 N1	
	(ii) $\theta \times 60 \cos 50 = 1200$ $\theta = 31.11^{\circ}$	K1 K1	
	$120^{\circ}E - 31.11^{\circ} = 88^{\circ}53'$ $\therefore$ Longitude of T is $88^{\circ}53'E$.	N1	



NO.14



SKEMA KERTAS 1

NO.SOALAN	JAWAPAN	NO.SOALAN	JAWAPAN
1	B	21	B
2	C	22	A
3	A	23	D
4	B	24	B
5	B	25	A
6	D	26	B
7	B	27	D
8	B	28	B
9	D	29	D
10	C	30	D
11	C	31	C
12	B	32	B
13	C	33	B
14	A	34	C
15	C	35	A
16	A	36	B
17	C	37	A
18	D	38	B
19	A	39	A
20	C	40	A

ERATA – KERTAS MATEMATIK (1449/2) PERCUBAAN SPM SBP 2011

NO. SOALAN	ASAL	SEPATUTNYA
5	(a)	
	...the height of the cylinder is of the cylinder is 28 cm and	...the height of the cylinder is 28 cm and
6(b)	“ $P \subset R$ if and only $R' \subset P'$ ”	“ $P \subset R$ if and only if $R' \subset P'$ ”
8	<i>Dua keeping kad dipilih secara</i>	<i>Dua keping kad dipilih secara</i>
15(a)	parallel to LM as viewed from X	parallel to MJ as viewed from X .
	yang selari dengan LM sebagaimana.....	yang selari dengan JM sebagaimana
15(b)(ii)	parallel to MQ as view	parallel to LM as view
	 yang selari dengan MQ sebagaimana...	 yang selari dengan LM sebagaimana...

ERATA SKEMA PEMARKAHAN KERTAS 2 MATEMATIK

NO.	ASAL	SEPATUTNYA
6(b)	If $P \subset R$ then $R' \subset P$ If $R' \subset P$ than $P \subset R$	If $P \subset R$ then $R' \subset P'$ If $R' \subset P'$ then $P \subset R$
15(c)	N1	N2