

SULIT
1449/1
Mathematics
Kertas 1
2011
 $1\frac{1}{4}$ jam



MAJLIS PENGETUA SEKOLAH MENENGAH MALAYSIA
CAWANGAN NEGERI SEMBILAN

PEPERIKSAAN PERCUBAAN BERSAMA
SIJIL PELAJARAN MALAYSIA 2011

MATHEMATICS

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 Melayu.*
3. *Calon dikehendaki membaca maklumat di halaman belakang kertas soalan ini.*

Kertas soalan ini mengandungi 32 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
 $= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

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

7. Average speed = $\frac{\text{distance travelled}}{\text{time taken}}$
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 = $\frac{\text{sum of (classmark} \times \text{frequency)}}{\text{sum of frequencies}}$

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

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

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

12. $P(A') = 1 - P(A)$

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

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

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

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

SULIT

4

1449/1

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

$$\frac{\text{panjang lengkok}}{\text{lili tan bula tan}} = \frac{\text{sudut pusat}}{360^\circ}$$

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

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

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

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

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

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

SULIT

5

1449/1

Answer all questions

Jawab semua soalan

- 1 Round off 0.04703 correct to three significant figures.

Bundarkan 0.04703 betul kepada tiga angka bererti.

- A 0.05
- B 0.050
- C 0.047
- D 0.0470

- 2 Express 5.231×10^2 as a single number.

Ungkapkan 5.231×10^2 sebagai satu nombor tunggal.

- A 0.05231
- B 0.5231
- C 52.31
- D 523.1

- 3 $2.74 \times 10^{-5} - 3.21 \times 10^{-6} =$

- A 2.419×10^{-5}
- B 2.419×10^{-6}
- C 3.036×10^{-5}
- D 3.036×10^{-6}

- 4 $11011_2 - 111_2 =$

- A 10000_2
- B 10100_2
- C 11100_2
- D 100010_2

SULIT

6

1449/1

- 5 Express 441_5 as a number in base eight.

Ungkapkan 441_5 sebagai nombor dalam asas lapan.

- A 170_8
- B 171_8
- C 176_8
- D 671_8

- 6 In Diagram 1, $PQRS$ is a rhombus. PST and SRU are straight lines.

Dalam Rajah 1, $PQRS$ ialah sebuah rombus. PST dan SRU adalah garis lurus.

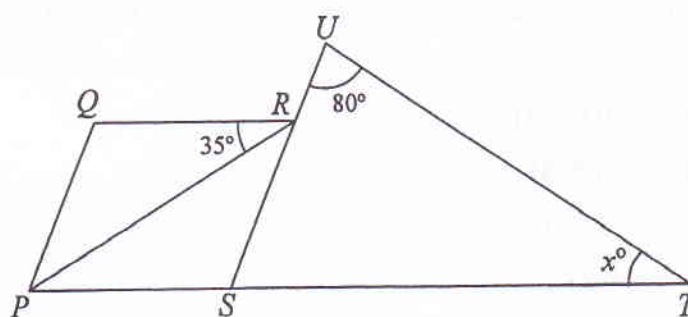


Diagram 1
Rajah 1

Find the value of x .

Cari nilai x .

- A 30
- B 45
- C 70
- D 80

SULIT

7

1449/1

- 7 In Diagram 2, $JKLMN$ is a regular pentagon. JKR and JLS are straight lines.

Dalam Rajah 2, $JKLMN$ ialah sebuah pentagon sekata. JKR dan JLS adalah garis lurus.

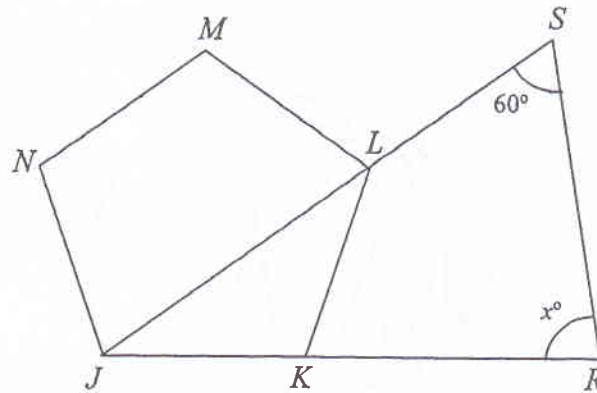


Diagram 2
Rajah 2

Find the value of x .

Cari nilai x .

- A 48
- B 72
- C 84
- D 96

- 8 In Diagram 3, JKL is a tangent to the circle with centre O , at K .

Dalam Rajah 3, JKL ialah tangen kepada bulatan berpusat O , di K .

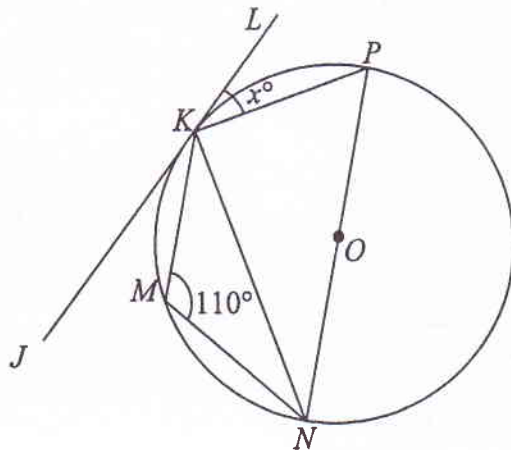


Diagram 3

Rajah 3

Find the value of x .

Cari nilai x .

- A 20
- B 35
- C 55
- D 70

SULIT

9

1449/1

- 9 In Diagram 4, triangle Q is the image of triangle P under a rotation of 90° clockwise.

Dalam Rajah 4, segi tiga Q adalah imej bagi segi tiga P di bawah suatu putaran 90° ikut arah jam.

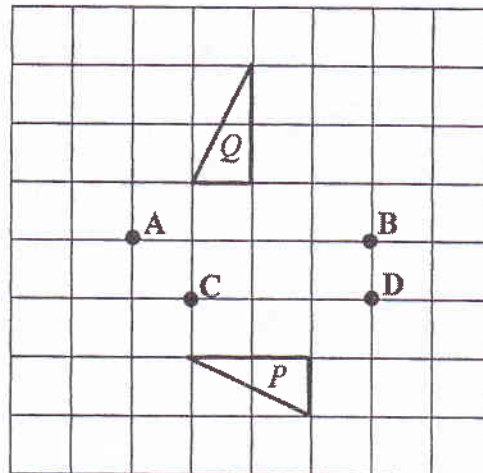


Diagram 4

Rajah 4

Which of the points A, B, C or D is the centre of the rotation ?

Antara titik A, B, C atau D yang manakah pusat putaran itu?

- 10 Diagram 5 shows five quadrilaterals drawn on square grids.
Rajah 5 menunjukkan lima sisi empat dilukis pada grid segi empat sama.

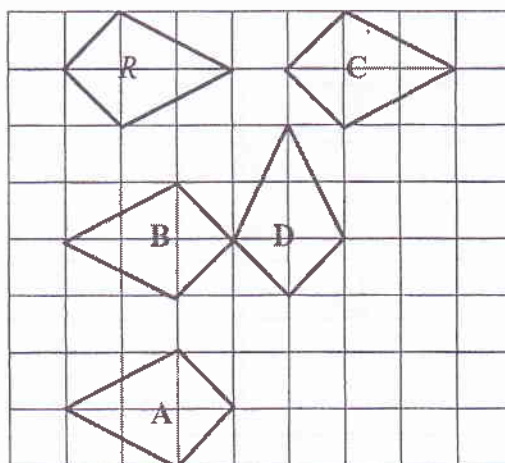


Diagram 5
Rajah 5

Which of the quadrilaterals A, B, C or D, is an image of R under a reflection in a certain line?

Antara sisi empat A, B, C atau D, yang manakah imej bagi R di bawah suatu pantulan pada garis tertentu?

- 11 In Diagram 6, JKL is a straight line.
Dalam Rajah 6, JKL ialah garis lurus.

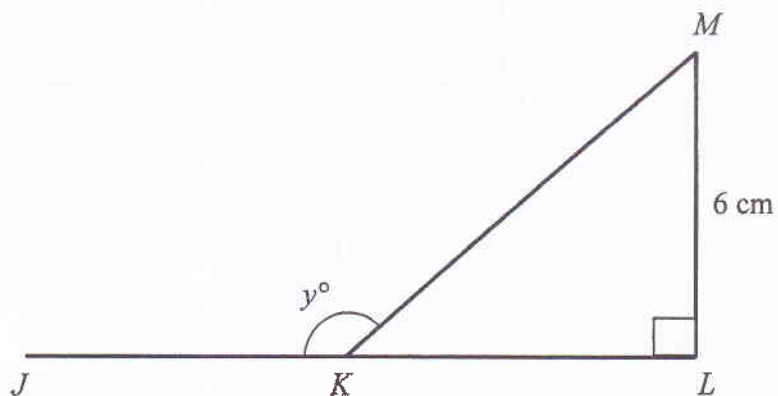


Diagram 6

Rajah 6

Given that $\cos \angle LMK = \frac{3}{5}$, find the value of $\cos y^\circ$.

Diberi bahawa $\cos \angle LMK = \frac{3}{5}$, cari nilai $\cos y^\circ$.

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

SULIT

12

1449/1

- 12 Diagram 7 shows the graph of $y = \cos x^\circ$.

Rajah 7 menunjukkan graf $y = \cos x^\circ$.

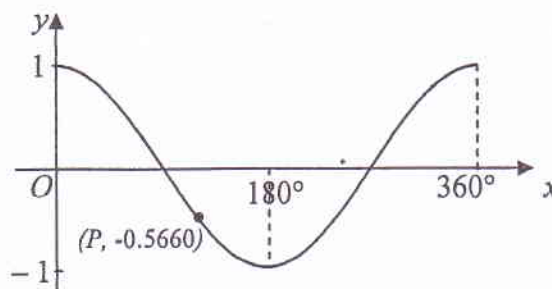


Diagram 7

Rajah 7

Find the value of P .

Cari nilai P .

- A 34.47°
- B 55.53°
- C 124.47°
- D 145.53°

- 13 Diagram 8 shows a unit circle. O is the origin of a Cartesian plane.

Rajah 8 menunjukkan sebuah bulatan unit. O ialah asalan pada suatu satah Cartesian.

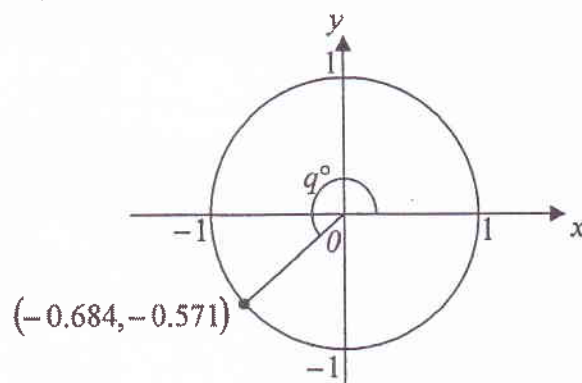


Diagram 8

Rajah 8

Find the value of q .

Cari nilai q .

- A 230.15
- B 223.15
- C 219.85
- D 214.35

SULIT

14

1449/1

- 15 In Diagram 10, P and Q are two points on the horizontal plane and R is the top of a vertical flagpole PR .

Dalam Rajah 10, P dan Q ialah dua titik pada satah mengufuk dan R ialah puncak sebatang tiang bendera tegak PR .

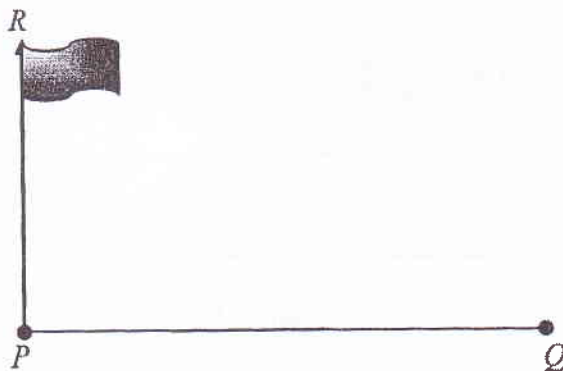


Diagram 10

Rajah 10

The angle of elevation of R from Q is 42° . The distance between P and Q is 16 m. Calculate the height, in m, of the flagpole PR .

Sudut dongakan R dari Q ialah 42° . Jarak di antara P dan Q ialah 16 m. Hitungkan tinggi, dalam m, tiang bendera PR itu.

- A 10.71
- B 11.89
- C 14.41
- D 17.77

- 16 Diagram 11 shows two vertical tower KL and JM on a horizontal plane.

Rajah 11 menunjukkan dua buah menara KL dan JM di atas satah mengufuk.

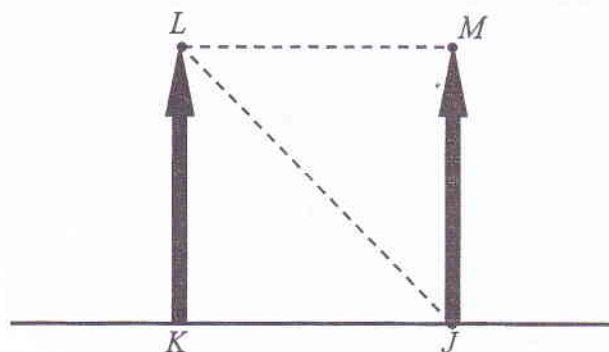


Diagram 11

Rajah 11

The angle of depression of point J from point L is

Sudut tunduk titik J dari titik L ialah

- A $\angle MLJ$
- B $\angle LJK$
- C $\angle JKL$
- D $\angle JLK$

- 17 Diagram 12 shows two points of P and Q on a horizontal plane.
Rajah 12 menunjukkan dua titik P dan Q pada satah mengufuk.

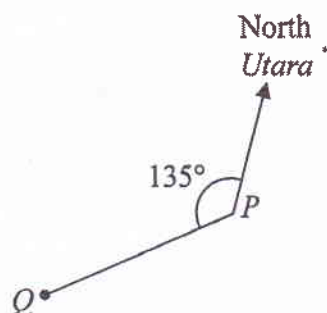


Diagram 12
Rajah 12

Find the bearing of P from Q .

Cari bearing P dari Q .

- A 315°
- B 225°
- C 135°
- D 045°

- 18 In Diagram 13, N is the North Pole and S is the South Pole. $PM=MS$.

Dalam Rajah 13, U ialah Kutub Utara dan S ialah Kutub Selatan. $PM=MS$.

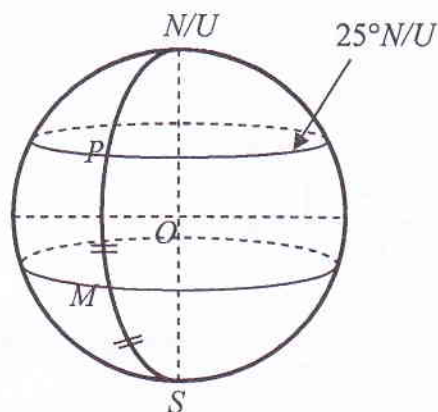


Diagram 13

Rajah 13

Find the latitude of M .

Cari latitud M .

- A $25^{\circ}S$
- B $32.5^{\circ}S$
- C $45^{\circ}S$
- D $57.5^{\circ}S$

19 $3p(p+1)-(p-2)^2 =$

19 $3p(p+1) - (p-2)^2 =$

A $2p^2 - p + 4$

B $2p^2 - p - 4$

C $2p^2 + 3p + 4$

D $2p^2 + 7p - 4$

20 Express $\frac{m}{3} - \frac{2(m^2 - 2)}{12m}$ as a single fraction in its simplest form.

Ungkapkan $\frac{m}{3} - \frac{2(m^2 - 2)}{12m}$ sebagai satu pecahan tunggal dalam bentuk termudah.

A $\frac{m^2 + 2}{6m}$

B $\frac{m^2 - 2}{6m}$

C $\frac{m^2 + 2}{12m}$

D $\frac{m^2 - 2}{12m}$

21 Given that $p = \frac{1}{p} + \frac{p}{q}$, express q in terms of p .

Diberi bahawa $p = \frac{1}{p} + \frac{p}{q}$, ungkapkan q dalam sebutan p .

A $\frac{p^2 - 1}{p^2}$

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

C $\frac{1}{p^2}$

D $\frac{1}{p^2 - 1}$

- 22 Given that $m + \frac{2}{3}(12m + 18) = -3$, calculate the value of m .

Diberi bahawa $m + \frac{2}{3}(12m + 18) = -3$, hitungkan nilai m .

A $-\frac{27}{25}$

B $-\frac{9}{5}$

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

D $-\frac{7}{3}$

- 23 Given that $3^{2y} = \frac{27}{3^y}$, find the value of y .

Diberi bahawa $3^{2y} = \frac{27}{3^y}$, cari nilai y .

A 3

B 1

C $\frac{1}{2}$

D $\frac{1}{3}$

24 Simplify :

Ringkaskan:

$$\left(m^{\frac{1}{3}}n^2\right)^3 \div (m^2n^{-4}) =$$

A $m^{-1}n^2$

B $m^{-1}n^{10}$

C mn^{10}

D m^2n

25 List all the integers x which satisfy both the simultaneous linear inequalities

$$\frac{3}{5}x - 2 \geq 1 \text{ and } 15 - x > 2.$$

Senaraikan semua integer x yang memuaskan kedua-dua ketaksamaan linear serentak $\frac{3}{5}x - 2 \geq 1$ dan $15 - x > 2$.

A 5, 6, 7, 8, 9, 10

B 6, 7, 8, 9, 10

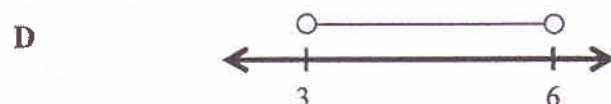
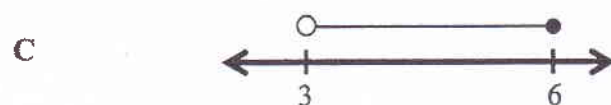
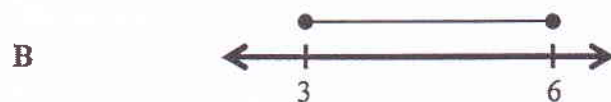
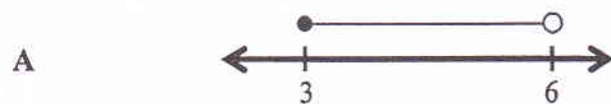
C 5, 6, 7, 8, 9, 10, 11, 12

D 6, 7, 8, 9, 10, 11, 12

26 Which number lines represents the solution of the linear inequalities

$$4 < 3x - 5 \leq 13?$$

Garis nombor manakah yang mewakili penyelesaian bagi ketaksamaan linear serentak $4 < 3x - 5 \leq 13$?



- 27 A bar chart in Diagram 14 shows a number of students attended the leadership course representing by four schools P , Q , R and S .

Carta palang dalam Rajah 14 menunjukkan bilangan murid yang menghadiri suatu kursus kepimpinan yang diwakili oleh empat buah sekolah P , Q , R dan S .

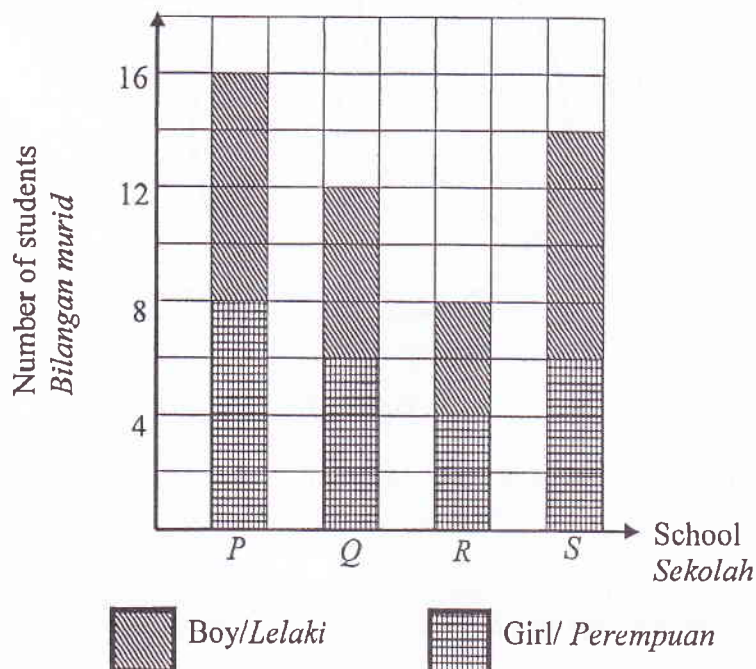


Diagram 14

Rajah 14

Calculate the different between number of boys and girls who attended the leadership course.

Hitungkan beza antara bilangan murid lelaki dengan murid perempuan yang menghadiri kursus kepimpinan itu.

- A 4
B 3
C 2
D 1

- 28 The pie chart in Diagram 15 shows the favourite games of a group of students.

Carta pai dalam Rajah 15 menunjukkan permainan yang diminati oleh sekumpulan murid.

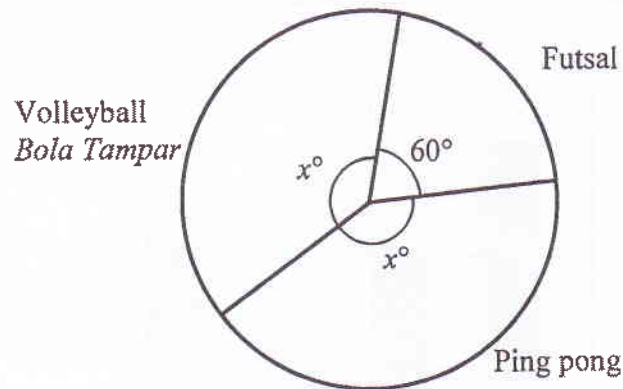


Diagram 15
Rajah 15

If the total number of students in the group is 108. How many students who decided the volleyball as their favourite game?

Jika jumlah bilangan murid dalam kumpulan itu ialah 108 orang. Berapakah bilangan murid yang memilih bola tampar sebagai permainan yang diminati?

- A 18
- B 45
- C 90
- D 150

SULIT

23

1449/1

- 29 Table 1 is a frequency table showing the marks obtained by a group of student in a Mathematics test.

Jadual 1 ialah jadual kekerapan yang menunjukkan markah diperolehi oleh sekumpulan murid dalam satu ujian Matematik.

Marks/ Markah	Frequency /Kekerapan
80-100	6
70-79	9
60-69	10
50-59	6
<50	5

Table 1
Jadual 1

Calculate the number of students that gets mark below than the modal class.

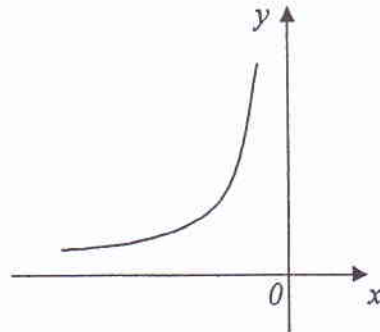
Hitung bilangan murid mendapat markah yang lebih rendah daripada kelas mod.

- A 6
- B 10
- C 15
- D 21

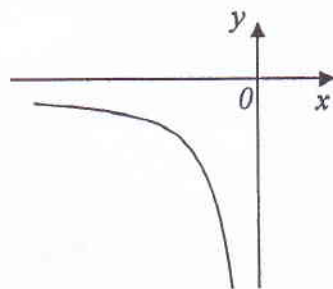
- 30 Which graph represents part of the graph $y = -\frac{5}{x}$?

Graf manakah yang mewakili sebahagian daripada graf $y = -\frac{5}{x}$?

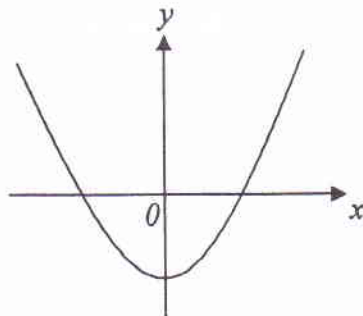
A



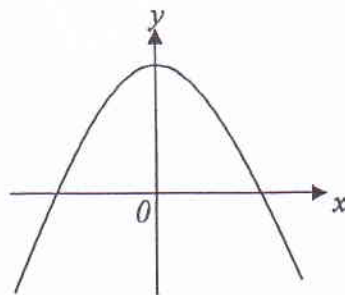
B



C



D



SULIT

25

1449/1

- 31 Given the universal set $\xi = \{ x : 20 < x \leq 34, x \text{ is an integer} \}$, and set $P = \{ x : x \text{ is a number such that the sum of its two digits is an odd number} \}$. Find set P' .

*Diberi set semesta $\xi = \{ x : 20 < x \leq 34, x \text{ ialah integer} \}$ dan set $P = \{ x : x \text{ ialah nombor dengan keadaan hasil tambah dua digitnya ialah nombor ganjil} \}$.
Cari set P' .*

- A $\{ 22, 24, 26, 28, 31, 33 \}$
- B $\{ 22, 24, 26, 30, 32, 34 \}$
- C $\{ 23, 25, 27, 29, 31, 32, 34 \}$
- D $\{ 23, 25, 27, 29, 30, 31, 32, 34 \}$

- 32 Diagram 16 is a Venn diagram showing the universal set $\xi = \{ \text{Form Five students} \}$, set $M = \{ \text{Students who passed Mathematics test} \}$ and set $S = \{ \text{Students who passed Science test} \}$.

Rajah 16 ialah gambar rajah Venn yang menunjukkan set semesta, $\xi = \{ \text{Murid Tingkatan Lima} \}$, set $M = \{ \text{Murid yang lulus ujian Matematik} \}$ dan set $S = \{ \text{Murid yang lulus ujian Sains} \}$.

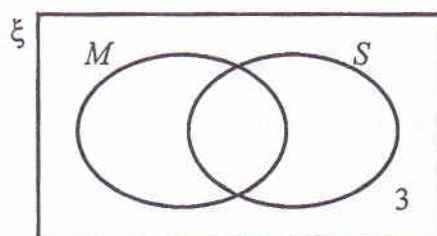


Diagram 16
Rajah 16

Given $n(\xi) = 100$, $n(M) = 45$ and $n(S) = 72$. Find the number of students who passed both of Mathematics and Science test.

Diberi $n(\xi) = 100$, $n(M) = 45$ dan $n(S) = 72$. Cari bilangan murid yang lulus kedua-dua ujian Matematik dan Sains.

- A 14
- B 17
- C 20
- D 27

- 33 In Diagram 17, gradient of straight line $PQ = \frac{4}{5}$.

Dalam Rajah 17, kecerunan garis lurus $PQ = \frac{4}{5}$.

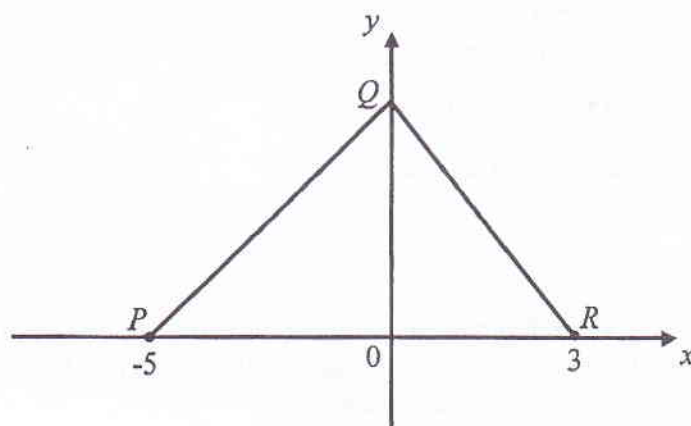


Diagram 17

Rajah 17

Find the gradient of straight line QR .

Cari kecerunan bagi garis lurus QR .

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

- 34 Diagram 18 shows the straight line PQ is parallel to the straight line RS .
Rajah 18 menunjukkan garis lurus PQ adalah selari dengan garis lurus RS .

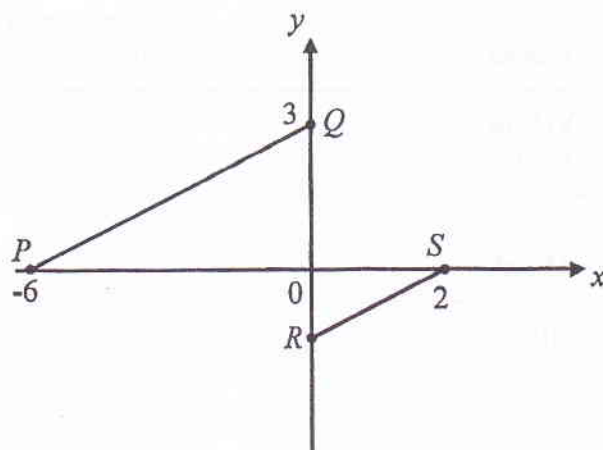


Diagram 18

Rajah 18

Find the y -intercept of RS .

Cari pintasan- y bagi RS .

- A -2
- B -1
- C 1
- D 2

35 Table 2 shows the number of marbles in a box.

Jadual 2 menunjukkan bilangan guli dalam sebuah kotak.

Colour <i>Warna</i>	Number of marbles <i>Bilangan guli</i>
Yellow <i>Kuning</i>	24
Red <i>Merah</i>	31
Blue <i>Biru</i>	x

Table 2
Jadual 2

A marble is picked at random from the box. The probability that a yellow marble is chosen is $\frac{3}{10}$. Find the value of x .

Sebiji guli dipilih secara rawak daripada kotak itu. Kebarangkalian memilih guli kuning ialah $\frac{3}{10}$. Cari nilai x itu.

- A 24
- B 25
- C 26
- D 28

- 36 In a class, there were eight students who wear spectacles.
If a student was chosen at random from the class, the probability that the student was wearing spectacles was $\frac{1}{5}$.

Six new students joined the class.

If a student is chosen from the class, state the probability that the student who wears spectacles.

Dalam sebuah kelas, terdapat lapan orang murid memakai cermin mata.

Jika murid dipilih secara rawak daripada kelas itu, kebarangkalian murid memakai cermin mata ialah $\frac{1}{5}$.

Enam orang murid baru menyertai kelas itu.

Jika seorang murid dipilih secara rawak daripada kelas itu, nyatakan kebarangkalian murid yang memakai cermin mata.

A $\frac{3}{23}$

B $\frac{3}{20}$

C $\frac{7}{23}$

D $\frac{7}{20}$

- 37 It is given that y varies directly as the cube root of x .
Find the relationship between y and x .

*Diberi bahawa y berubah secara langsung dengan punca kuasa tiga x .
Cari hubungan antara y dan x .*

A $y \propto x^{\frac{1}{3}}$

B $y \propto x^3$

C $y \propto \frac{1}{x^{\frac{1}{3}}}$

D $y \propto \frac{1}{x^3}$

- 38 Table 3 shows the values of m, n and p . Given that $m \propto \frac{\sqrt{n}}{p^2}$.

Jadual 3 menunjukkan nilai-nilai m, n dan p . Diberi bahawa $m \propto \frac{\sqrt{n}}{p^2}$.

m	n	p
18	9	2
4	q	3

Table 3

Jadual 3

Find the value of q .

Cari nilai q .

A $\frac{1}{4}$

B $\frac{2}{3}$

C $\frac{3}{2}$

D $\frac{9}{4}$

SULIT

31

1449/1

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

A $\begin{pmatrix} 13 & -6 \\ 6 & 5 \end{pmatrix}$

B $\begin{pmatrix} 13 & -6 \\ -6 & 5 \end{pmatrix}$

C $\begin{pmatrix} 13 & 6 \\ 6 & 5 \end{pmatrix}$

D $\begin{pmatrix} 13 & 6 \\ -6 & 5 \end{pmatrix}$

40 Given that $\begin{pmatrix} 1 & 3 \\ 0 & h \end{pmatrix} \begin{pmatrix} h \\ 3 \end{pmatrix} = \begin{pmatrix} 6 \\ -9 \end{pmatrix}$, calculate the value of h .

Diberi bahawa $\begin{pmatrix} 1 & 3 \\ 0 & h \end{pmatrix} \begin{pmatrix} h \\ 3 \end{pmatrix} = \begin{pmatrix} 6 \\ -9 \end{pmatrix}$, hitung nilai h .

A 6

B 3

C 0

D -3

END OF QUESTION PAPER

KERTAS SOALAN TAMAT

INFORMATION FOR CANDIDATES
MAKLUMAT UNTUK CALON

1. This question paper consists of 40 questions.
Kertas soalan ini mengandungi 40 soalan.
2. Answer **all** questions.
Jawab semua soalan.
3. 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 made. 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 dilukiskan 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 can be used.
Buku sifir matematik empat angka boleh digunakan.
9. You may use a non-programmable scientific calculator.
Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogram.

SULIT

1449/2

Mathematics

Kertas 2

2011

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

NAMA : _____

TINGKATAN : _____

1449/2



MAJLIS PENGETUA SEKOLAH MENENGAH MALAYSIA
CAWANGAN NEGERI SEMBILAN

PEPERIKSAAN PERCUBAAN BERSAMA
SIJIL PELAJARAN MALAYSIA 2011

MATHEMATICS

Kertas 2

Dua jam tiga puluh minit

**JANGAN BUKA KERTAS SOALAN INI
SEHINGGA DIBERITAHU**

1. *Tulis nama dan tingkatan anda pada ruang yang disediakan.*
2. *Kertas soalan ini adalah dalam dwibahasa.*
3. *Soalan dalam bahasa Inggeris mendahului soalan yang sepadan dalam bahasa Melayu*
4. *Calon dibenarkan menjawab keseluruhan atau sebahagian soalan sama ada dalam bahasa Inggeris atau bahasa Melayu.*
5. *Calon dikehendaki membaca maklumat di halaman belakang kertas soalan ini.*

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

Kertas soalan ini mengandungi 36 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
 $= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
6. Midpoint / Titik tengah
 $(x, y) = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$
7. Average speed = $\frac{\text{distance travelled}}{\text{time taken}}$
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 = $\frac{\text{sum of (classmark} \times \text{frequency)}}{\text{sum of frequencies}}$
Min = $\frac{\text{hasil tambah (nilai titik tengah kelas} \times \text{kekerapan)}}{\text{hasil tambah kekerapan}}$
10. Pythagoras Theorem
Teorem Pithagoras
 $c^2 = a^2 + b^2$
11. $P(A) = \frac{n(A)}{n(S)}$
12. $P(A') = 1 - P(A)$
13. $m = \frac{y_2 - y_1}{x_2 - x_1}$
14. $m = -\frac{y - \text{intercept}}{x - \text{intercept}}$
 $m = -\frac{\text{pintasan} - y}{\text{pintasan} - x}$

[Lihat halaman sebelah
SULIT

**SHAPE 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 = $\pi d = 2\pi j$
3. Area of circle = πr^2
Luas bulatan = πj^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 keratan rentas* $\times$ *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 = $\frac{1}{3} \times \text{base area} \times \text{height}$
Isipadu piramid tegak = $\frac{1}{3} \times \text{luas tapak} \times \text{tinggi}$
11. Sum of interior angles of a polygon
Hasil tambah sudut pedalaman poligon
= $(n - 2) \times 180^\circ$

SULIT

4

1449/2

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

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

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

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

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

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

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

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

[Lihat halaman sebelah
SULIT

SULIT

5

1449/2

Section A
Bahagian A

[52 marks]

[52 markah]

For
Examiner's
Use

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

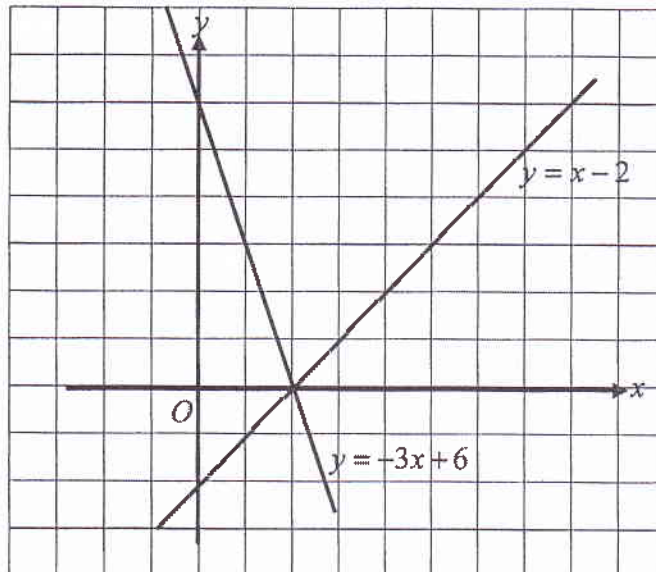
- 1 On the graph in the answer space, shade the region which satisfies the three inequalities $y \geq x - 2$, $y \geq -3x + 6$, and $y < 6$.

[3 marks]

Pada graf di ruang jawapan, lorek rantau yang memuaskan ketiga-tiga ketaksamaan $y \geq x - 2$, $y \geq -3x + 6$, dan $y < 6$.

[3 markah]

Answer/Jawapan:



SULIT

6

1449/2

For
Examiner's
Use

2

Diagram 2 shows a right pyramid with the horizontal square base $PQRS$.

Rajah 2 menunjukkan sebuah piramid tegak dengan tapak mengufuk segi empat sama $PQRS$.

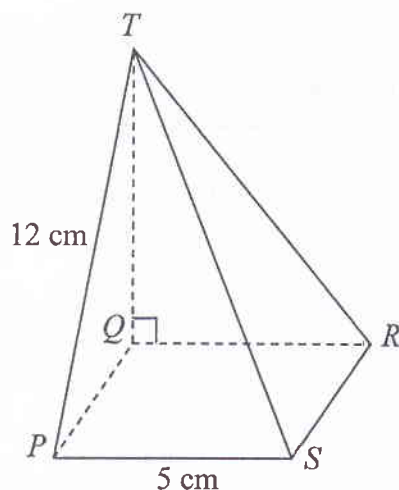


Diagram 2

Rajah 2

(a) Name the angle between the line ST and the plane PQT ,

Namakan sudut di antara garis ST dengan satah PQT ,

(b) Calculate the angle between the line ST and the plane PQT ,

Hitungkan sudut di antara garis ST dengan satah PQT ,

[3 marks]

[3 markah]

Answer/ Jawapan:

(a)

(b)

SULIT

7

1449/2

- 3 Solve the following quadratic equation :
Selesaikan persamaan kuadratik berikut:

$$\frac{3x^2 - 5x}{2} = x + 3$$

Answer/ Jawapan:

[4 marks]
[4 markah]

For
Examiner's
Use

- 4 Calculate the value of x and of y that satisfy the following simultaneous linear equations:

Hitung nilai x dan nilai y yang memuaskan persamaan linear serentak berikut:

$$\begin{aligned}\frac{1}{3}x + 2y &= -1 \\ x - 3y &= 6\end{aligned}$$

Answer/ Jawapan:

[4 marks]
[4 markah]

SULIT

8

1449/2

For
Examiner's
Use

5

Diagram 5 shows a composite solid formed by the combination of a right prism and a half circular cylinder. Trapezium $PQRS$ is the uniform cross-section of the prism.

Rajah 5 menunjukkan sebuah gabungan pepejal yang dibentuk daripada cantuman sebuah prisma tegak dan sebuah separuh silinder. Trapezium $PQRS$ ialah keratan rentas seragam prisma itu.

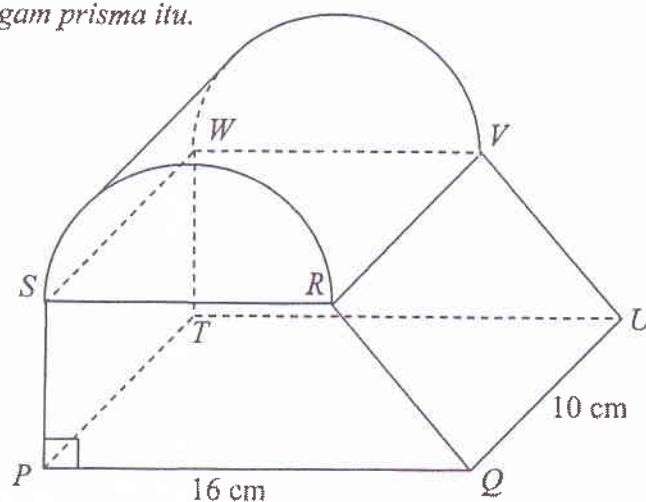


Diagram 5
Rajah 5

The diameter of the half circular cylinder is 14 cm and the volume of the composite solid is 1970 cm^3 .

Diameter separuh silinder itu ialah 14 cm dan isipadu gabungan pepejal itu ialah 1970 cm^3 .

Use $\pi = \frac{22}{7}$, calculate

Menggunakan $\pi = \frac{22}{7}$, hitung

- (a) the volume, in cm^3 , of the half circular cylinder.
isipadu, dalam cm^3 , separuh silinder.
- (b) the height, in cm, of PS .
tinggi, dalam cm, PS .

[4 marks]
[4 markah]

[Lihat halaman sebelah
SULIT

SULIT

9

1449/2

Answer / Jawapan:

For
Examiner's
Use

(a)

(b)

SULIT

10

1449/2

For
Examiner's
Use

- 6 (a) Complete the following statement using the quantifier “all” or “some”, to make it a **true** statement.
- Lengkapkan setiap pernyataan berikut dengan pengkuantiti “semua” atau “sebilangan”, supaya menjadi suatu pernyataan benar.*

.....factors of 4 are factors of 10
.....faktor bagi 4 adalah faktor bagi 10

- (b) Complete the Premise 2 in the following argument:
Lengkapkan Premis 2 dalam hujah berikut:
- Premise 1: All prime number are divisible by itself and 1.
Premis 1: Semua nombor perdana boleh dibahagi tepat dengan dirinya dan 1.
- Premise 2/ Premis 2:
- Conclusion : 7 is divisible by itself and 1.
Kesimpulan : 7 boleh dibahagi tepat dengan dirinya dan 1.
- (c) Make a general conclusion by induction for the sequence of numbers 2, 7, 24,... which follows the following pattern.
- Buat satu kesimpulan umum secara aruhan bagi urutan nombor 2, 7, 24,... yang mengikut pola berikut.*

$$\begin{aligned} 2 &= 3^1 - 1 \\ 7 &= 3^2 - 2 \\ 24 &= 3^3 - 3 \\ \dots &= \dots \end{aligned}$$

[5 marks]
[5 markah]

Answer / Jawapan:

- (a)
- (b) Premise 2/ Premis 2:
- (c)

SULIT

11

1449/2

For
Examiner's
Use

7 Diagram 7 shows a trapezium $OSTU$ drawn on a Cartesian plane.

Rajah 7 menunjukkan trapezium $OSTU$ yang dilukis pada satah Cartesian.

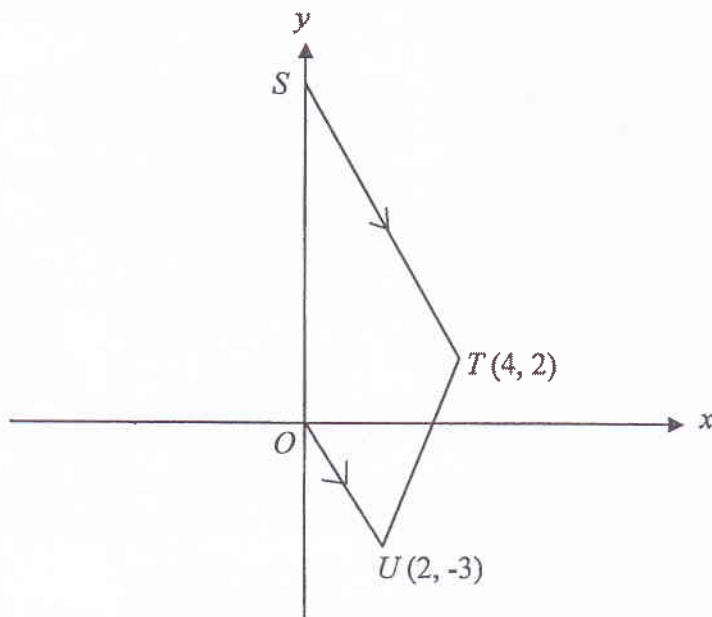


Diagram 7
Rajah 7

[5 marks]
[5 markah]

Find

Cari

- (a) the equation of the straight line ST ,
persamaan garis lurus ST ,
- (b) the x -intercept of the straight line ST .
pintasan- x bagi garis lurus ST .

Answer / *Jawapan:*

(a)

(b)

SULIT

12

1449/2

For
Examiner's
Use

8

Diagram 8 shows four numbered cards in box *P* and three cards labelled with letters in box *Q*.

Rajah 8 menunjukkan empat kad nombor di dalam kotak P dan tiga kad yang berlabel dengan huruf di dalam kotak Q.

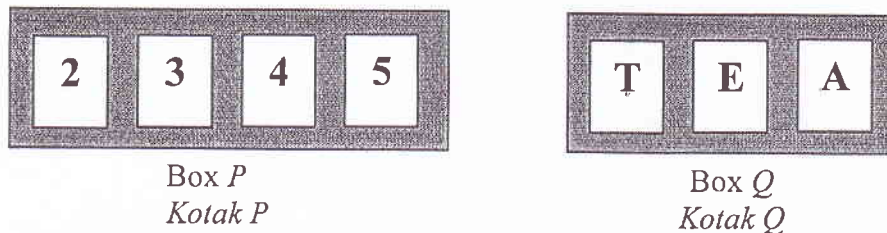


Diagram 8
Rajah 8

A card is picked at random from box *P* and then a card is picked at random from box *Q*

Sekeping kad diambil secara rawak daripada kotak P dan kemudian satu kad pula dipilih secara rawak daripada kotak Q

By listing the sample of all the possible outcomes of the event, find the probability that

Dengan menyenaraikan sampel bagi semua kesudahan peristiwa yang mungkin, cari kebarangkalian

(a) a card with a prime number and the card labelled with vowel are picked
satu kad nombor perdana dan kad berlabel vokal dipilih

(b) a card with a number which is multiple of 2 or the card labelled consonant are picked.
satu kad nombor gandaan 2 atau kad berlabel konsonan dipilih.

[5 marks]
[5 markah]

[Lihat halaman sebelah
SULIT

SULIT

13

1449/2

For
Examiner's
Use

Answer / Jawapan:

(a)

(b)

SULIT

14

1449/2

For
Examiner's
Use

9

In Diagram 9, OPQ is a sector of a circle with centre P and $OPRS$ is a semicircle with centre O . SOP is a straight line.

Dalam Rajah 9, OPQ ialah sektor bulatan berpusat P dan $OPRS$ ialah semibulatan berpusat O . SOP ialah garis lurus.

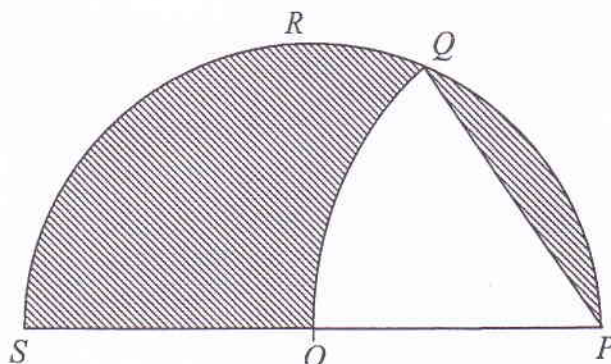


Diagram 9
Rajah 9

It is given that $OP = 14$ cm and $\angle OPQ = 60^\circ$.

Use $\pi = \frac{22}{7}$, calculate

Diberi bahawa $OP = 14$ cm dan $\angle OPQ = 60^\circ$.

Guna $\pi = \frac{22}{7}$, hitungkan

- (a) the perimeter, in cm, of the shaded region,
perimeter, dalam cm, kawasan yang berlorek,
- (b) the area, in cm^2 , of the shaded region.
luas, dalam cm^2 , kawasan yang berlorek.

[6 marks]
[6 markah]

SULIT

15

1449/2

Answer / Jawapan:

For
Examiner's
Use

(a)

(b)

SULIT

16

1449/2

For
Examiner's
Use

10

Diagram 10 shows the speed-time graph for the movement of a particle for a period of 13 s.

Rajah 10 menunjukkan graf laju-masa bagi pergerakan suatu zarah bagi tempoh 13 s.

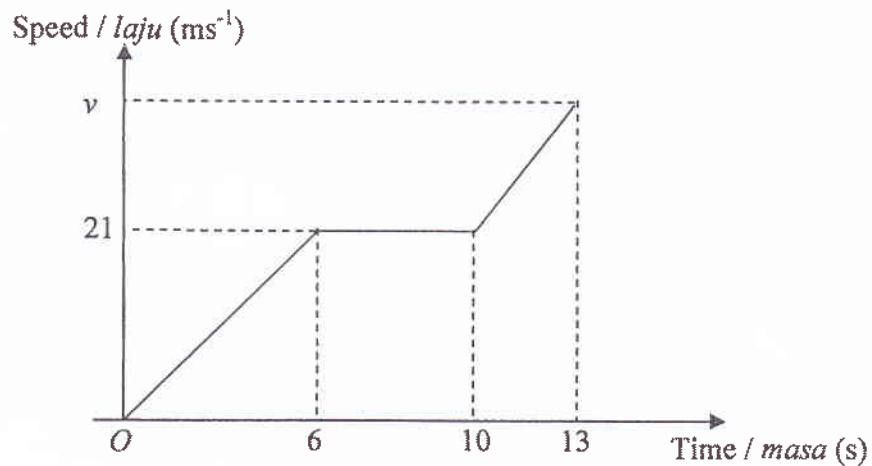


Diagram 10
Rajah 10

(a) State the uniform speed, in ms^{-1} , of the particle.

Nyatakan laju seragam, dalam ms^{-1} , zarah itu.

(b) Calculate the rate of change of speed, in ms^{-2} , of the particle in the first 6 s.

Hitungkan kadar perubahan laju, dalam ms^{-2} , bagi zarah itu dalam 6 s pertama.

(c) Calculate the value of v , if the total distance travel in 13 s is 223.5 m.

Hitungkan nilai v , jika jumlah jarak yang dilalui dalam 13 s ialah 223.5 m.

[6 marks]

[6 markah]

[Lihat halaman sebelah

SULIT

SULIT

17

1449/2

Answer / Jawapan:

*For
Examiner's
Use*

(a)

(b)

(c)

SULIT

18

1449/2

For
Examiner's
Use

11

Given that the matrix equation $\frac{1}{k} \begin{pmatrix} -2 & 4 \\ m & 3 \end{pmatrix} \begin{pmatrix} 3 & -4 \\ 1 & -2 \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$

Diberi bahawa persamaan matriks $\frac{1}{k} \begin{pmatrix} -2 & 4 \\ m & 3 \end{pmatrix} \begin{pmatrix} 3 & -4 \\ 1 & -2 \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$

(a) Find the value of m and of k .

Cari nilai m dan nilai k .

(b) Write the following simultaneous linear equations as matrix equation:

Tulis persamaan linear serentak berikut dalam bentuk persamaan matriks:

$$3x - 4y = 13$$

$$x - 2y = 6$$

Hence, using matrix method, calculate the value of x and of y .

Seterusnya, dengan menggunakan kaedah matriks, hitung nilai x dan nilai y .

[7 marks]

[7 markah]

Answer / Jawapan:

(a)

(b)

SULIT

20

1449/2

For
Examiner's
Use

Answer/Jawapan:

(a)

x	-4	-3	-2	-1	0	1	2	3	4
y	53		5	2	5	8	5	-10	

Table 1 / Jadual 1

(b) Refer graph on page 21.

Rujuk graf di halaman 21.

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

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

(d) The equation of the straight line : $\dots\dots\dots$

Persamaan garis lurus :

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

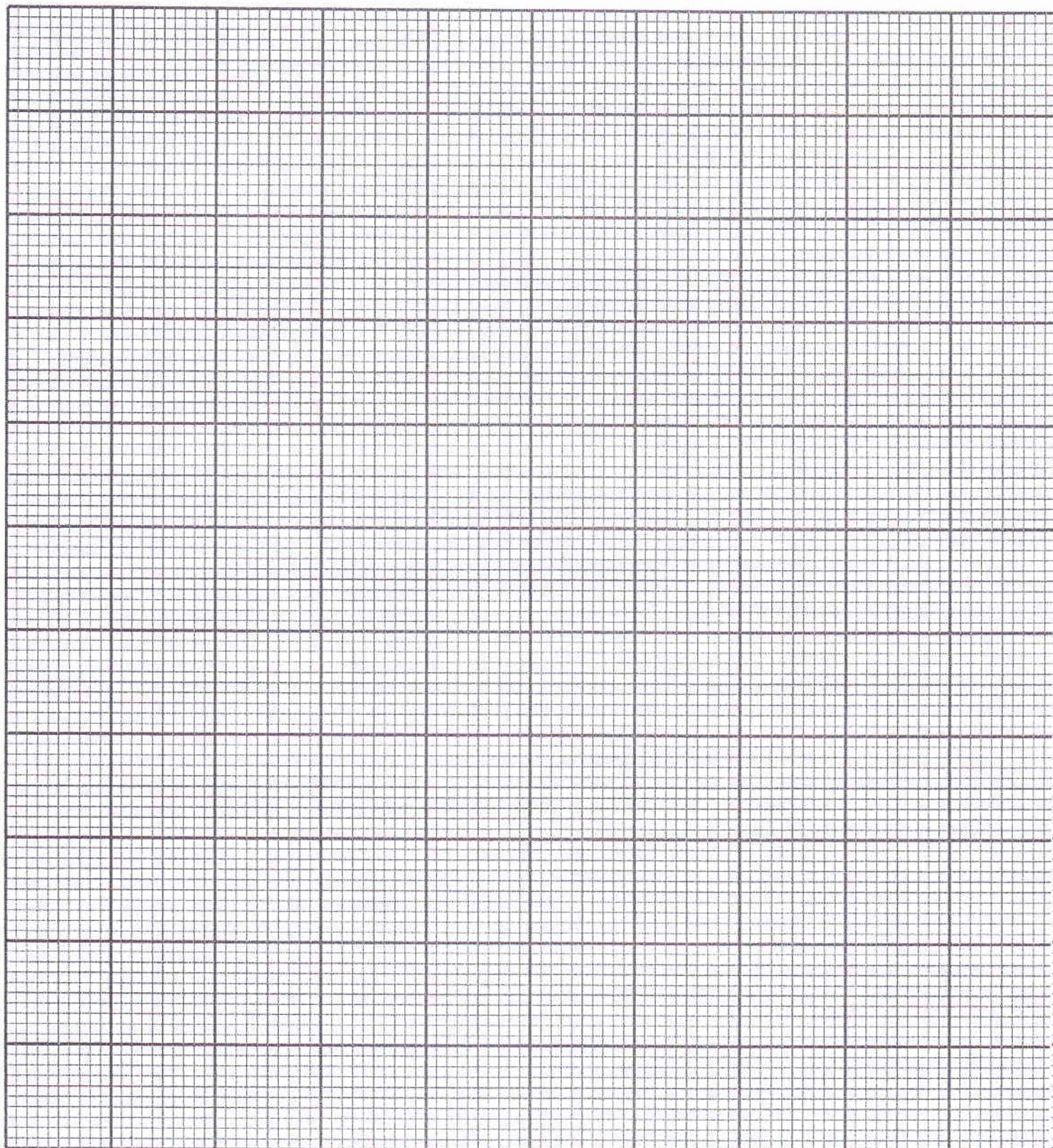
[3 marks]
[3 markah]

SULIT

21

1449/2

Graph for Question 12
Graf untuk Soalan 12



SULIT

22

1449/2

For
Examiner's
Use

13

Diagram 13.1 shows point $(2, 5)$ and the straight line $y = x$ drawn on a Cartesian plane.

Rajah 13.1 menunjukkan titik $(2, 5)$ dan garis lurus $y = x$ dilukis pada suatu satah Cartesian

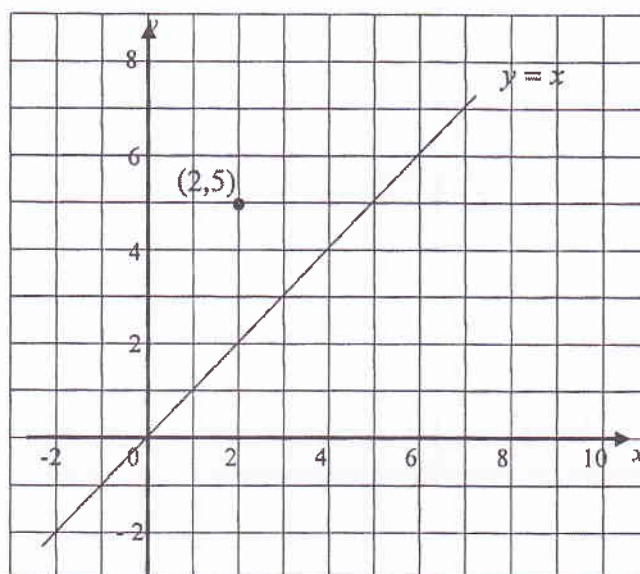


Diagram 13.1

Rajah 13.1

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

Transformation **R** is a reflection in the straight line $y = x$

State the coordinates of the image of point $(2,5)$ under each of the following transformations :

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

Penjelmaan **R** ialah pantulan pada garis lurus $y = x$.

Nyatakan koordinat imej bagi titik $(2,5)$ di bawah penjelmaan berikut :

- (i) **T**,
- (ii) **TR**.

[3 marks]

[3 markah]

[Lihat halaman sebelah

SULIT

SULIT

23

1449/2

Answer/ jawapan:

For
Examiner's
Use

(a) (i)

(ii)

SULIT

24

1449/2

For
Examiner's
Use

- (b) Diagram 13.2 shows three pentagon, $ABCDE$, $FGHJK$ and $SGPQR$ drawn on a Cartesian plane.

Rajah 13.2 menunjukkan tiga pentagon, $ABCDE$, $FGHJK$ dan $SGPQR$ dilukis pada suatu satah Cartesian.

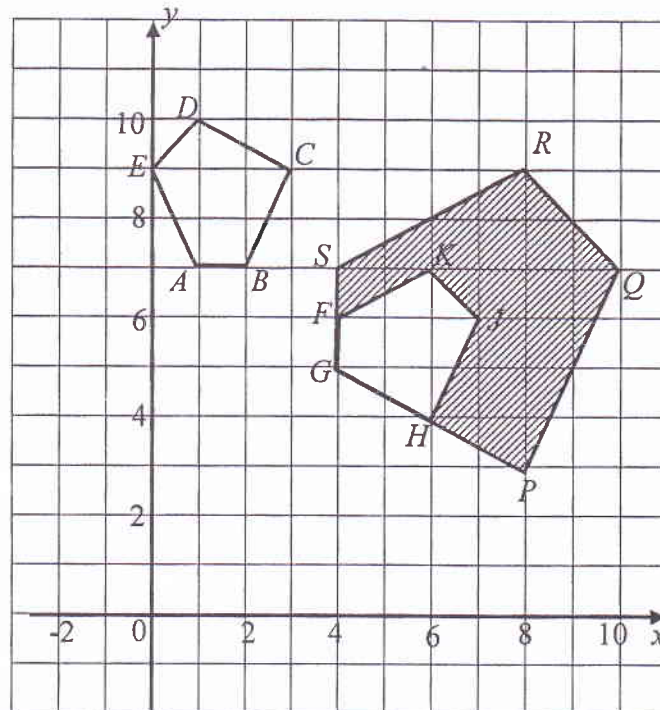


Diagram 13.2

Rajah 13.2

- (i) $SGPQR$ is the image of $ABCDE$ under the combined transformation VU .

$SGPQR$ ialah imej bagi $ABCDE$ di bawah gabungan penjelmaan VU .

Describe in full, the transformation :

Huraikan selengkapnya, penjelmaan :

(a) U

(b) V

- (ii) Given that the shaded region represents a region of area 330 m^2 , calculate the area, in m^2 , of the region represented by $FGHJK$.

Diberi bahawa kawasan berlorek mewakili luas 330 m^2 , hitungkan luas, dalam m^2 , kawasan yang diwakili oleh $FGHJK$.

[9 marks]

[9 markah]

[Lihat halaman sebelah

SULIT

SULIT

25

1449/2

Answer / Jawapan:

For
Examiner's
Use

(i) (a)

(b)

(ii)

SULIT

26

1449/2

For
Examiner's
Use

- 14 The data below shows the masses, in kg, of old newspapers collected by 40 students in a recycling campaign.

Data di bawah menunjukkan jisim, dalam kg, surat khabar lama yang dikumpul oleh 40 orang murid dalam satu kempen kitar semula.

41	31	42	30	46	50	37	35
37	41	45	36	47	47	46	40
43	46	52	40	53	44	45	30
50	58	43	52	37	42	31	49
48	31	57	38	42	57	54	52

Diagram 14

Rajah 14

- (a) Based on the data in diagram 14, complete Table 14 in the answer space.

Berdasarkan data dalam Rajah 14, lengkapkan Jadual 14 di ruang jawapan.

[4 marks]

[4 markah]

- (b) Based on Table 14, calculate the estimated mean of the mass of old newspapers collected by a student.

Berdasarkan Jadual 14, hitung min anggaran jisim surat khabar lama yang dikumpul oleh seorang murid.

[3 marks]

[3 markah]

- (c) For this part of the question, use the graph paper provided on page 29.

Untuk ceraian soalan ini, gunakan kertas graf yang disediakan di halaman 29.

By using a scale 2 cm to 5 kg on the horizontal axis and 2 cm to 1 student on the vertical axis, draw a frequency polygon for the data.

Dengan menggunakan skala 2 cm kepada 5 kg pada paksi mengufuk dan 2 cm kepada 1 murid pada paksi mencancang, lukis satu poligon kekerapan bagi data tersebut.

[5 marks]

[5 markah]

[Lihat halaman sebelah

SULIT

SULIT

27

1449/2

Answer / Jawapan:

For
Examiner's
Use

(a)

Mass (kg) <i>Jisim (kg)</i>	Mid point <i>Titik tengah</i>	Frequency <i>Kekerapan</i>
30 – 34		

Table 14
Jadual 14

(b)

(c) Refer graph on page 29.

Rujuk graf di halaman 29.

SULIT

28

1449/2

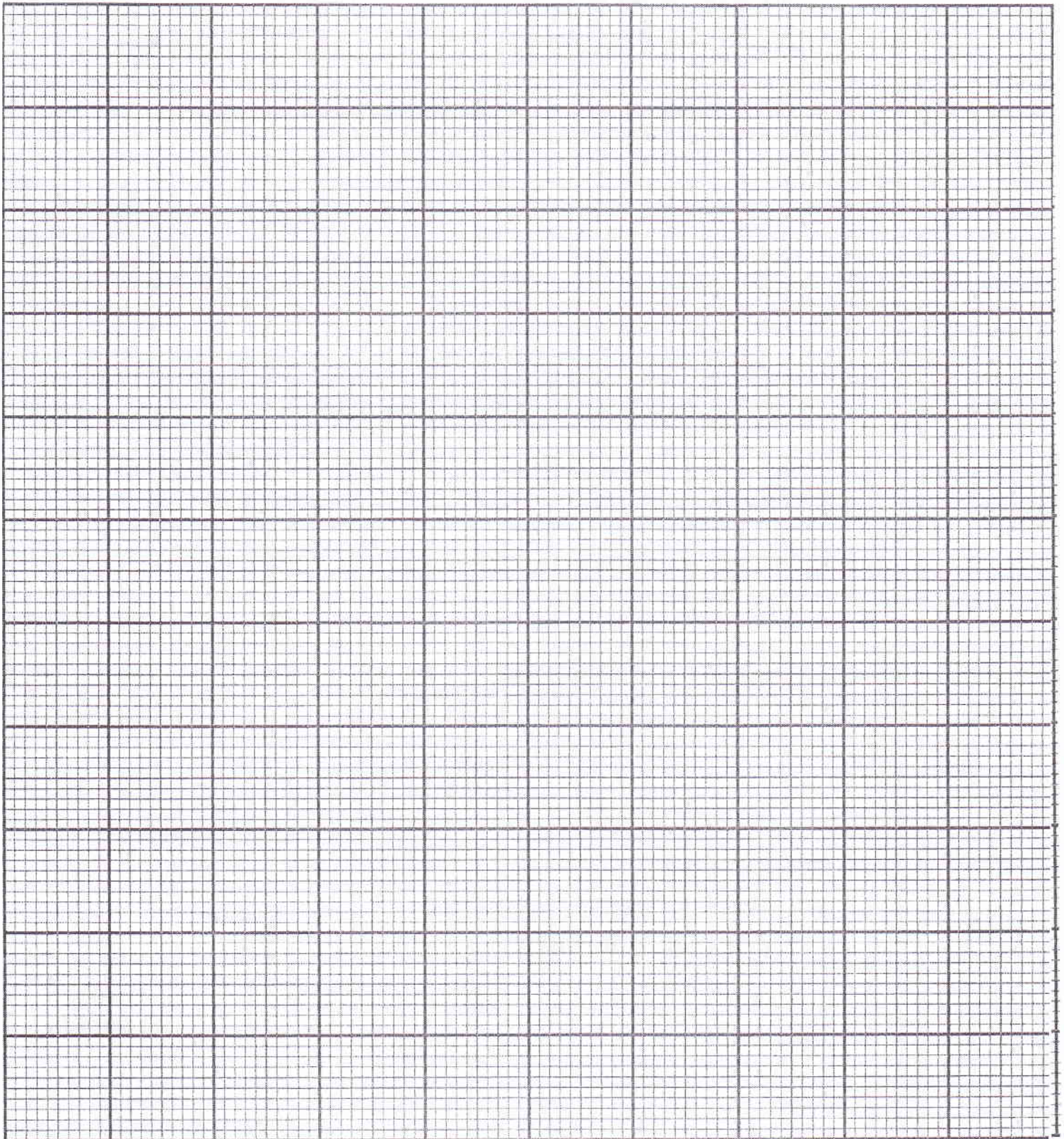
BLANK PAGE
HALAMAN KOSONG

SULIT

29

1449/2

Graph for Question 14
Graf untuk Soalan 14



SULIT

30

1449/2

For
Examiner's
Use

- 15 You are **not** allowed to use graph paper to answer this question.

Anda tidak dibenarkan menggunakan kertas graf untuk menjawab soalan ini.

Diagram 15.1 shows a solid right prism with rectangular base $ABCD$ on a horizontal plane.

Rajah 15.1 menunjukkan sebuah pepejal berbentuk prisma tegak dengan tapak segiempat tepat $ABCD$ terletak di atas satah mengufuk.

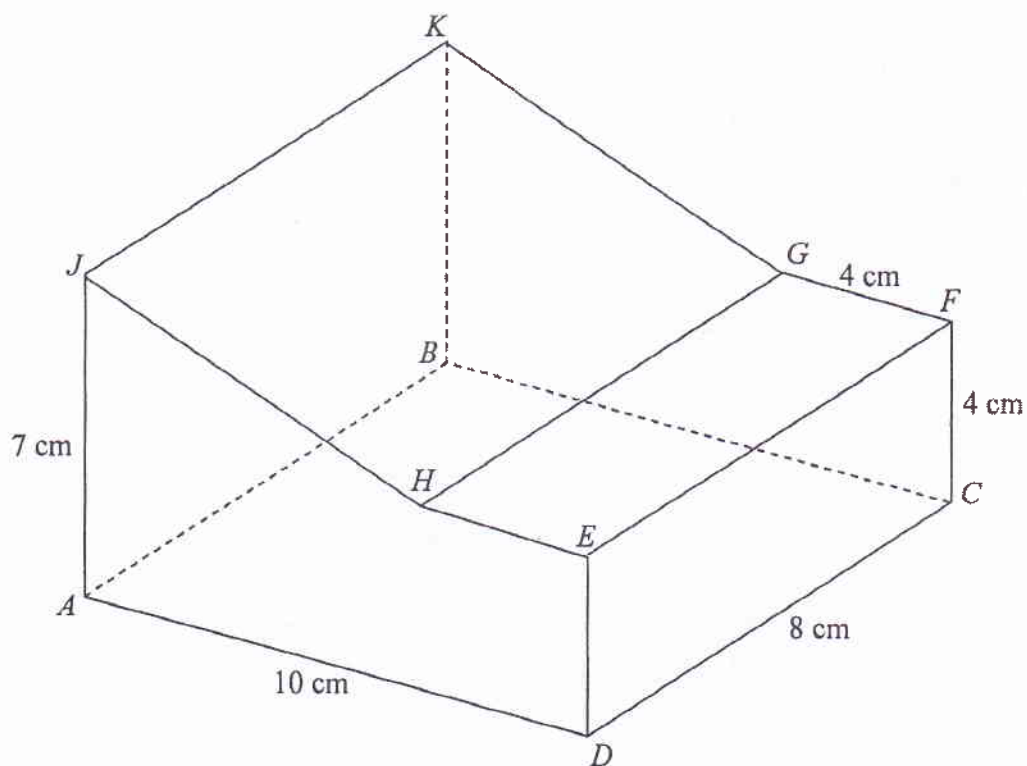


Diagram 15.1
Rajah 15.1

- (a) Draw to full scale, the plan of the solid.
Lukis dengan skala penuh, pelan pepejal itu.

[3 marks]
[3 markah]

SULIT

31

1449/2

Answer / Jawapan :

(a)

*For
Examiner's
Uses*

SULIT

32

1449/2

For
Examiner's
Use

- (b) A half cylinder solid HLE is removed from the solid in Diagram 15.1. The remaining solid is shown in Diagram 15.2.

Sebuah separuh silinder HLE dikeluarkan dari pepejal dalam Rajah 15.1. Pepejal yang tinggal ditunjukkan dalam Rajah 15.2.

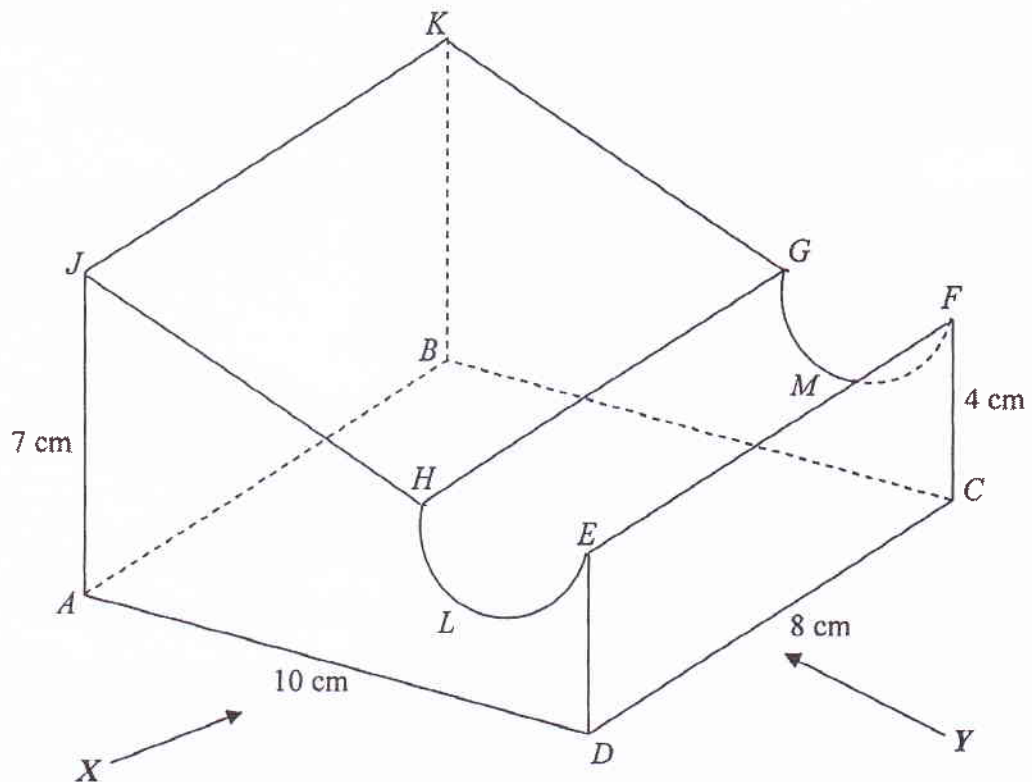


Diagram 15.2
Rajah 15.2

Draw to full scale,

Lukis dengan skala penuh,

- (i) the elevation of the remaining solid on a vertical plane parallel to AD as viewed from X .

dongakan bagi pepejal yang tinggal pada satah mencancang yang selari dengan AD sebagaimana dilihat dari X .

[4 marks]

[4 markah]

- (ii) the elevation of the remaining solid on a vertical plane parallel to DC as viewed from Y .

dongakan bagi pepejal yang tinggal pada satah mencancang yang selari dengan DC sebagaimana dilihat dari Y .

[5 marks]

[5 markah]

[Lihat halaman sebelah

SULIT

SULIT

33

1449/2

Answer / Jawapan :

*For
Examiner's
Use*

(b) (i)

(ii)

SULIT

34

1449/2

For
Examiner's
Use

- 16 $P (30^{\circ}N, 50^{\circ}W)$, $Q (30^{\circ}N, 130^{\circ}E)$, R and T are four points on the surface of the earth. PR is the diameter of the earth.
- $P (30^{\circ}N, 50^{\circ}W)$, $Q (30^{\circ}N, 130^{\circ}E)$, R dan T adalah empat titik pada permukaan bumi. PR ialah diameter bumi.
- (a) State the longitude of R . [2 marks]
Nyatakan longitud bagi R . [2 markah]
- (b) T lies due south of Q and the distance of TQ measured along the surface of the earth is 2400 nautical miles.
Calculate the latitude of T . [3 marks]
 *T terletak ke selatan Q dan jarak TQ diukur sepanjang permukaan bumi ialah 2400 batu nautika.
Hitung latitud bagi T .* [3 markah]
- (c) Calculate the shortest distance, in nautical mile, from P to Q , measured along the surface of the earth. [3 marks]
Hitung jarak terpendek, dalam batu nautika, dari P ke Q diukur sepanjang permukaan bumi. [3 markah]
- (d) An aeroplane took off from P and flew due east to Q along the common parallel of latitude and then due south to T . The average speed for the whole flight is 750 knots.
Calculate the time taken, in hours, for the whole flight. [4 marks]
*Sebuah kapal terbang berlepas dari P dan terbang arah ke timur ke Q di sepanjang selarian latitud sepunya dan kemudian terbang arah ke selatan ke T . Purata laju seluruh penerbangan ialah 750 knot.
Hitung masa diambil, dalam jam, bagi seluruh penerbangan itu.* [4 markah]

SULIT

35

1449/2

Answer / Jawapan:

For
Examiner's
Use

(a)

(b)

(c)

(d)

END OF QUESTION PAPER
KERTAS SOALAN TAMAT

INFORMATION FOR CANDIDATES
MAKLUMAT UNTUK CALON

1. This question paper consists of two sections: **Section A** and **Section B**.
*Kertas soalan ini mengandungi dua bahagian: **Bahagian A** dan **Bahagian B**.*
2. Answer **all** questions in **Section A** and four questions from **Section B**.
*Jawab **semua** soalan dalam **Bahagian A** dan **empat** soalan daripada **Bahagian B**.*
3. Write your answers clearly in the spaces provided in the question paper.
Jawapan anda hendaklah ditulis pada ruang yang disediakan dalam kertas soalan ini.
4. Show your working. It may help you to get marks.
Tunjukkan langkah-langkah penting dalam kerja mengira anda. Ini boleh membantu anda untuk mendapatkan markah.
5. If you wish to change your answer, neatly cross out the answer that you have done. Then write down the new answer.
Jika anda hendak menukar jawapan, batalkan jawapan yang telah dibuat. Kemudian tulis 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. The marks allocated for each question and sub-part of a question are shown in brackets.
Markah yang diperuntukkan bagi setiap soalan dan ceraian soalan ditunjukkan dalam kurungan.
8. A list of formulae is provided on pages 2 to 4.
Satu senarai rumus disediakan di halaman 2 hingga 4.
9. A booklet of four-figure mathematical tables is provided.
Sebuah buku sifir matematik empat angka disediakan.
10. You may use a non-programmable scientific calculator.
Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogramkan.
11. Hand in this question paper to the invigilator at the end of the examination.
Serahkan kertas soalan ini kepada pengawas peperiksaan pada akhir peperiksaan.



MALAYSIA PENGETUA SEKOLAH MENENGAH MALAYSIA

CAWANGAN NEGERI SEMBILAN

PEPERIKSAAN PERCUBAAN BERSAMA
SUKL PELAJARAN MALAYSIA 2011

MATHEMATICS

Kertas 1

PERATURAN PEMARKAHAN

PEPERIKSAAN PERCUBAAN SPM 2011
JABATAN PELAJARAN NEGERI SEMBILAN

MATEMATIK

Kertas 1

1. D	11.D	21.B	31.A
2. D	12.C	22.C	32.C
3. A	13.C	23.B	33.D
4. B	14.B	24.B	34.B
5. B	15.C	25.C	35.B
6. A	16.A	26.C	36.C
7. C	17.D	27.C	37.A
8. A	18.B	28.B	38.D
9. B	19.D	29.C	39.B
10.D	20.A	30.A	40. D



MAJLIS PENGETUA SEKOLAH MENENGAH MALAYSIA
CAWANGAN NEGERI SEMBILAN
PEPERIKSAAN PERCUBAAN BERSAMA
SILIL PELAJARAN MALAYSIA 2011

MATHEMATICS

Kertas 2

PERATURAN PEMARKAHAN

No	Marking Scheme	Marks
1		p1 p2
2	$\angle$ STP $\tan \theta = \frac{5}{12}$ or equivalent $\theta = 22.62^\circ$ or $22^\circ 37'$	3 p1 K1 N1
3	$3x^2 - 7x - 6 = 0$ $(3x + 2)(x - 3) = 0$ $x = -\frac{2}{3}, x = 3$	K1 K1 N1 N1 4
4	$x + 6y = -3$ $9y = -9$ $y = -1$ $x = 3$	K1 K1 N1 N1 4

5 (a)	$\frac{1}{2} \times \frac{22}{7} \times 7 \times 7 \times 10$ 770	K1 N1
(b)	$\frac{1}{2}(16+14)h \times 10 = 1200$ $h = 8$	K1 N1
6 (a)	some / sebagian	P1
(b)	7 is a prime number / 7 ialah nombor perdana	K2
(c)	$3^x = n$ $n = 1, 2, 3, \dots$	K1 N1
7 (a)	$m = \frac{0 - (-3)}{0 - 2} = -\frac{3}{2}$ $2 = -\frac{3}{2}(4) + c$ $c = 8$ $y = -\frac{3}{2}x + 8$ or equivalent	K1 K1 N1
(b)	$-\frac{3}{2}x + 8 = 0$ x-intercept = $\frac{16}{3}$	K1 N1
		5

3

Sample space

P1

Box P \ Box Q	J	E	A
2	(2,T)	(2,E)	(2,A)
3	(3,T)	(3,E)	(3,A)
4	(4,T)	(4,E)	(4,A)
5	(5,T)	(5,E)	(5,A)

$$n(s) = 12$$

$$(a) \{(2, E), (2, A), (3, E), (3, A), (5, E), (5, A)\}$$

K1

$$\frac{6}{12} = \frac{1}{2}$$

N1

$$(b) \{(2, T), (2, E), (2, A), (3, T), (4, T), (4, E), (4, A), (5, T)\}$$

K1

$$\frac{8}{12} = \frac{2}{3}$$

N1

5

9 (a)

K1

$$\frac{180^\circ}{360^\circ} \times 2 \times \frac{22}{7} \times 14 \quad \text{or} \quad \frac{60^\circ}{360^\circ} \times 2 \times \frac{22}{7} \times 14$$

$$\frac{180^\circ}{360^\circ} \times 2 \times \frac{22}{7} \times 14 + \frac{60^\circ}{360^\circ} \times 2 \times \frac{22}{7} \times 14 + 14 + 14 + 14$$

K1

$$100.67 \quad \text{or} \quad 100\frac{2}{3}$$

N1

(b)

$$\frac{180^\circ}{360^\circ} \times \frac{22}{7} \times 14 \times 14 \quad \text{or} \quad \frac{60^\circ}{360^\circ} \times \frac{22}{7} \times 14 \times 14$$

K1

$$\frac{180^\circ}{360^\circ} \times \frac{22}{7} \times 14 \times 14 - \frac{60^\circ}{360^\circ} \times \frac{22}{7} \times 14 \times 14$$

K1

$$205\frac{1}{3} \quad \text{or} \quad 205.33$$

N1

6

4

10 (a)	21	P1
(b)	$\frac{21-0}{6-0}$ or $\frac{0-21}{0-6}$	K1
	$\frac{21}{6}$	N1
(c)	$\frac{1}{2} \times 6 \times 21$ or 4×21 or $\frac{1}{2}(21+v) \times 3$	K1
	$\frac{1}{2} \times 6 \times 21 + 4 \times 21 + \frac{1}{2}(21+v) \times 3 = 223.5$	K1
	$v = 30$	N1
	6	
11 (a)	$m = -1$	P1
	$k = -2$	P2
	<u>Note:</u> $3(-2) - (-4)(1)$, award P1	
(b)	$\begin{pmatrix} 3 & -4 \\ 1 & -2 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 13 \\ 6 \end{pmatrix}$	K1
	$\begin{pmatrix} x \\ y \end{pmatrix} = -\frac{1}{2} \begin{pmatrix} -2 & 4 \\ -1 & 3 \end{pmatrix} \begin{pmatrix} 13 \\ 6 \end{pmatrix}$	K1
	$x = 1$	N1
	$y = -\frac{5}{2}$	N1
	7	

12 (a)	<table border="1"> <tr> <td>x</td><td>-3</td><td>4</td></tr> <tr> <td>y</td><td>20</td><td>-43</td></tr> </table>	x	-3	4	y	20	-43	KIK1
x	-3	4						
y	20	-43						
(b)	<u>Graph/ Refer graph on Lampiran1)</u> Axes drawn in the correct directions with uniform scales for $-4 \leq x \leq 4$ and $-43 \leq y \leq 53$ All 7 points and *2 points correctly plotted or curve passes through all the points for $-4 \leq x \leq 4$ and $-43 \leq y \leq 53$ A smooth and continuous curve without any straight line and passes through all 9 correct points using the given scale for $-4 \leq x \leq 4$ and $-43 \leq y \leq 53$	P1 K2 N1						
	<u>Notes:</u> 1. 7 or 8 points correctly plotted, award K1 2. Ignore curve out of range							
(c) (i)	$y = -25 \pm 1$	P1						
(ii)	$x = -2.8 \pm 0.1$	P1						
(d)	Identify equation $y = 10x - 5$ or equivalent. Straight line $y = 10x - 5$ correctly drawn $x = -0.75 \pm 0.05$, -3.3 ± 0.1	K1 K1 N1N1						
	12							

13 (a) (i)	(4, 2)	P1	
(ii)	(7, -1)	P2	
(b) (i)	U : Rotation 90° clockwise / 270° anticlockwise at centre (2,5) Putaran 90° arah jam / 270° lawan arah jam pada pusat (2,5) V : Enlargement with scale factor 2 at centre (4,5) Pembesaran dengan faktor skala 2 di pusat (4,5)	P3	
(c) (ii)	$2^2 = \frac{330 + x}{x}$ $x = 110$	K1K1 N1	
			12

14 (a)

Class interval Selang kelas (kg)	Midpoint Titik tengah	Frequency Kekerapan
30 – 34	32	5
35 – 39	37	6
40 – 44	42	10
45 – 49	47	9
50 – 54	52	7
55 – 59	57	3

Note:

Allow two mistakes in frequency for P1

(b)

$$\frac{5 \times 32 + 6 \times 37 + 10 \times 42 + 9 \times 47 + 7 \times 52 + 3 \times 57}{5 + 6 + 10 + 9 + 7 + 3}$$

44

Graph

Axes drawn in the correct direction with uniform scales for $27 \leq x \leq 62$ and $0 \leq y \leq 10$.

*6 points correctly plotted or line of frequency polygon seen on the points.

Point (27,0) and (62,0) plotted or line seen on the frequency polygon.

Correct frequency polygon with 8 correct points are plotted

P1P1P2

K2

N1

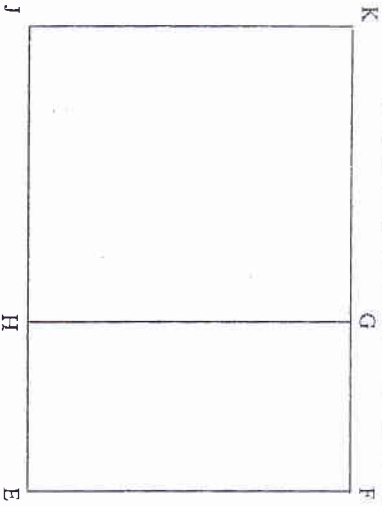
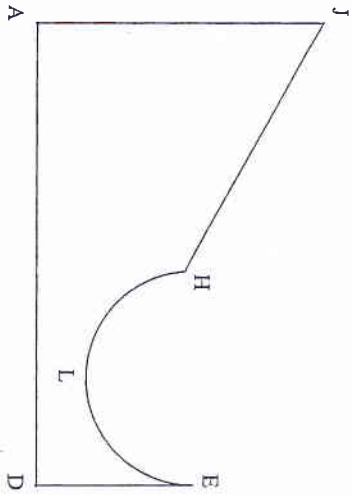
P1

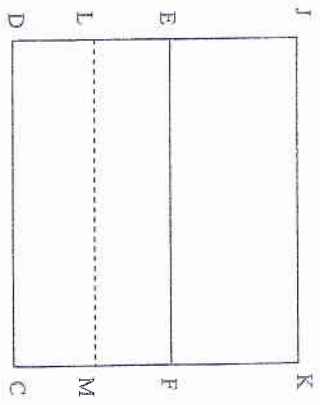
K2

N1

N1

12

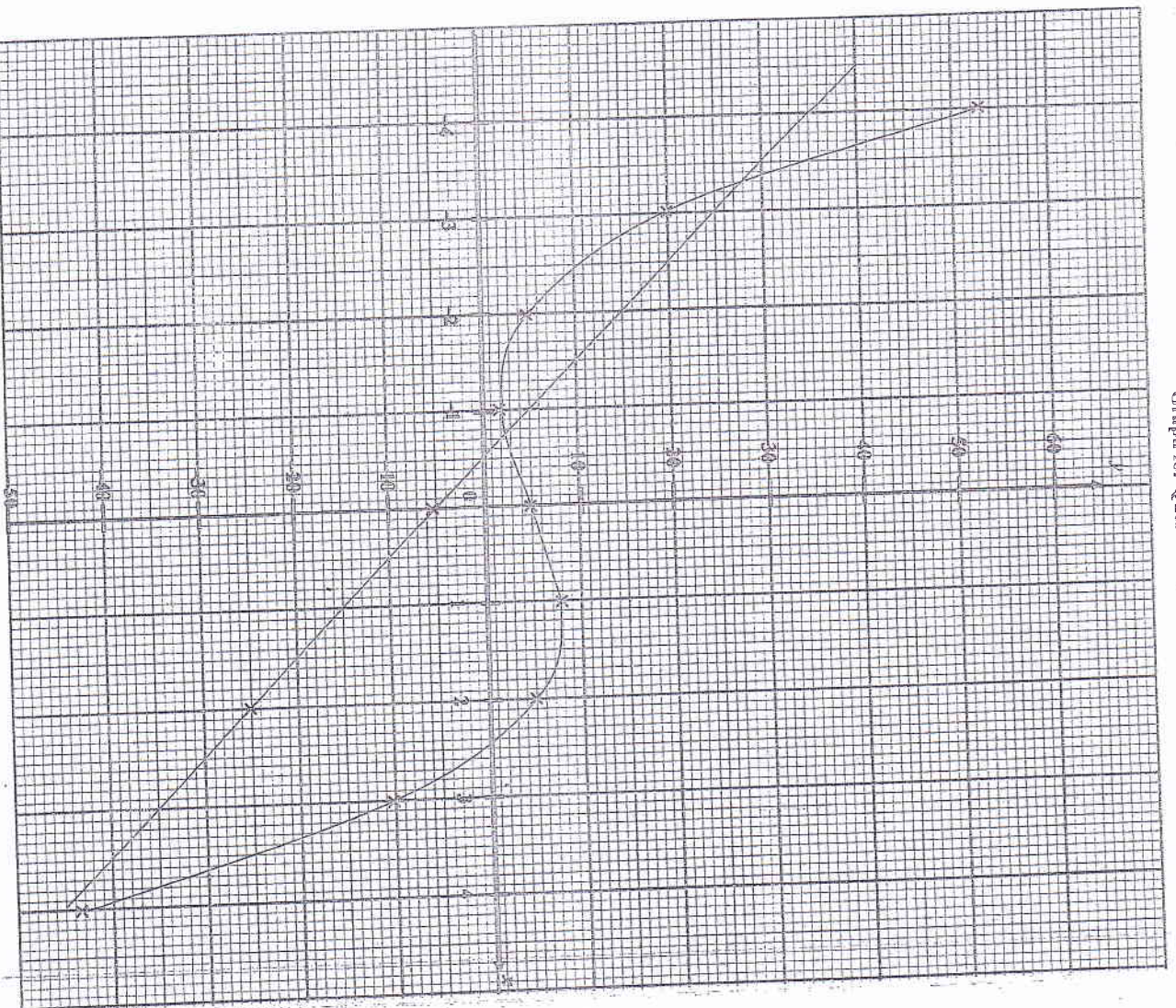
15 (a)	 Correct shape with rectangles $JEFK$, $JHGK$ and $HEFG$. All solid lines $JE = KF > JK = HG = EF > JH = KG > HE = GF$ The measurement is accurate to ± 0.2 cm (one way) and the angles at all vertices of the rectangles are $90^\circ \pm 1^\circ$.	K1
(b)(i)	 Correct shape $ADEHJ$. All solid lines $AD > AJ > ED$ Measurements correct to ± 0.2 cm (one way) and $\angle A, \angle D = 90^\circ \pm 1^\circ$	K1 K1 N2

15(b) (ii)	 Correct shape with rectangles $DCKI$, $DCFE$ and $EFKI$. All solid lines. <u>Note:</u> L and M joined with dashed line to form rectangle $LMFE$ LM is dotted line. $DC > CK > CF > FK > CM = MF$ Measurement correct to ± 0.2 cm. (one way) and all angles at vertices of rectangles is $90^\circ \pm 1^\circ$.	K1 K1 N2
	12	

16 (a)	130° E or 130° T	PIP1
(b)	$\theta \times 60^\circ = 2400$ $40^\circ - 30^\circ$ $10^\circ S$	K1 K1 N1
(c)	$120^\circ \times 60$ 7200	KIK1 N1
(d)	$180^\circ \times 60 \cos 30^\circ$ $\frac{180^\circ \times 60 \cos 30^\circ + 2400}{1} = 750$ 15.67	KIK1 N1
		12

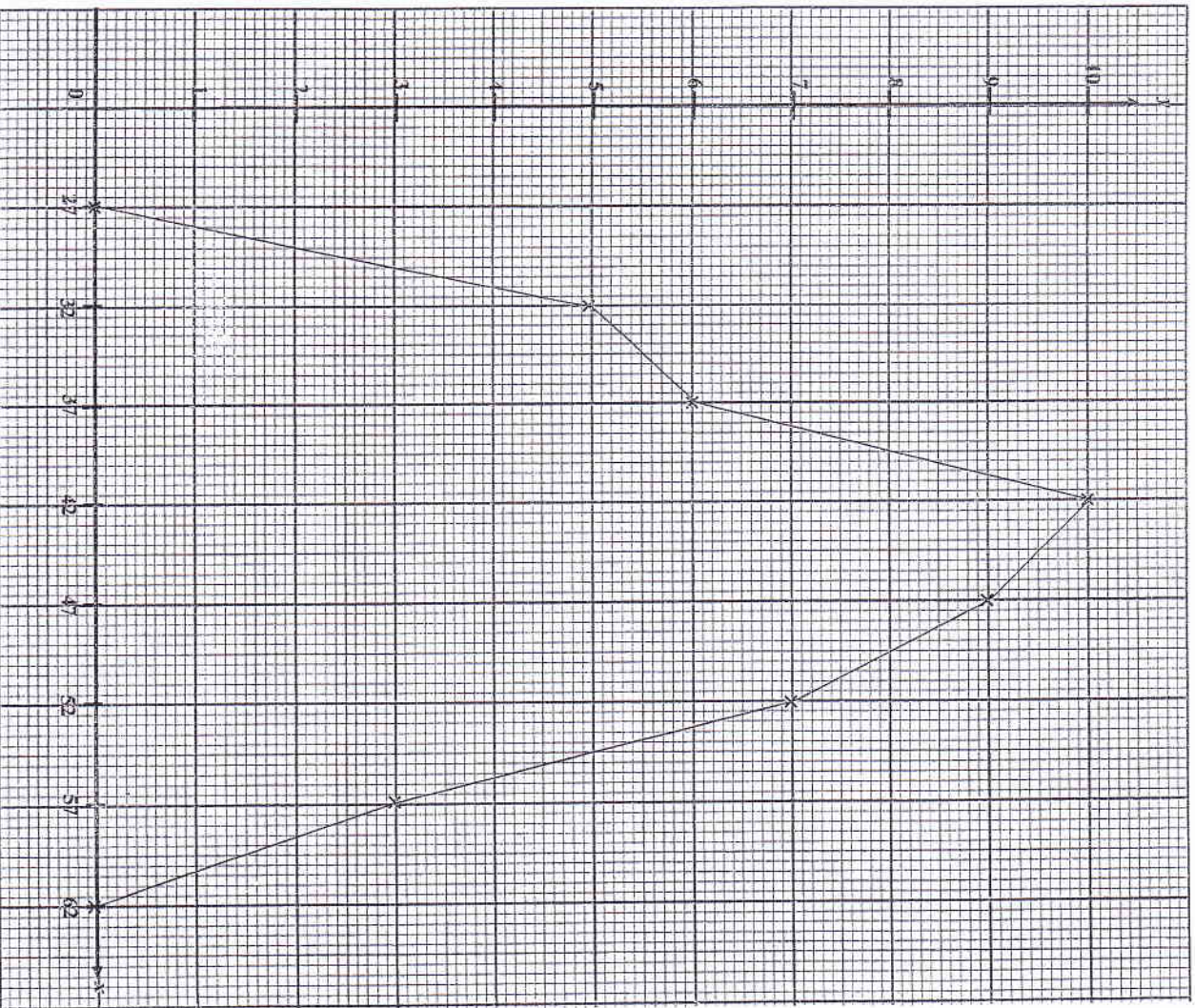
Lampiran 1

Graph for Question 12



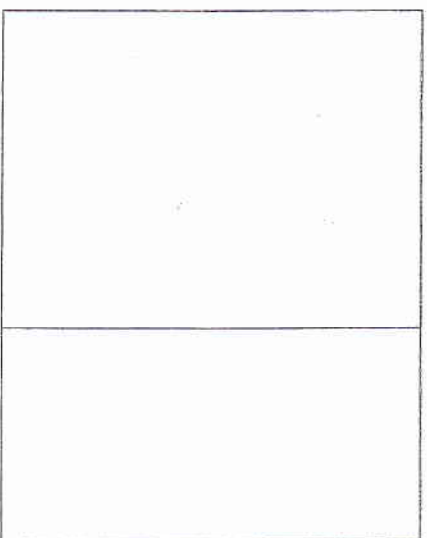
LAPPRAM 2

Graph for Question 14

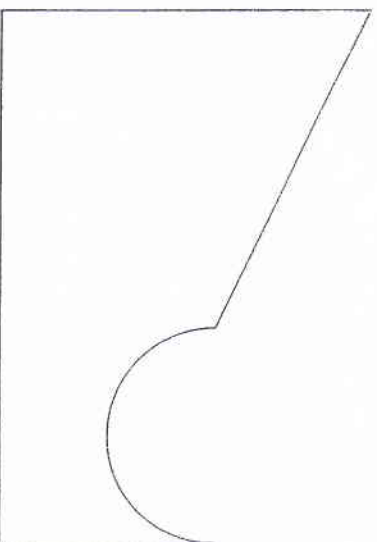


LAPPRAM 3 : 15. ACTUAL SIZE

15 (a)



15 (b) (i)



--	--	--