



BAHAGIAN PENGURUSAN SEKOLAH BERASRAMA PENUH
DAN SEKOLAH KECAMERLANGAN
KEMENTERIAN PENDIDIKAN MALAYSIA

PENTAKSIRAN DIAGNOSTIK AKADEMIK SBP 2013
PERCUBAAN SIJIL PELAJARAN MALAYSIA

MATEMATIK

Kertas 1

1 Jam 15 Minit

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

Arahan:

1. Kertas soalan ini mengandungi **40** soalan.
2. Jawab **semua** soalan.
3. Tiap-tiap soalan diikuti oleh empat pilihan jawapan iaitu **A, B, C** dan **D**. Bagi tiap-tiap soalan, pilih **satu** jawapan sahaja. **Hitamkan** jawapan anda pada kertas jawapan objektif yang disediakan.

MATHEMATICAL FORMULAE

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

RELATIONS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

SHAPES AND SPACE

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

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

3 Area of circle = πr^2

4 Curved surface area of cylinder = $2\pi rh$

5 Surface area of sphere = $4\pi r^2$

6 Volume of right prism = cross sectional area $\times$ length

7 Volume of cylinder = $\pi r^2 h$

8 Volume of cone = $\frac{1}{3} \pi r^2 h$

9 Volume of sphere = $\frac{4}{3} \pi r^3$

10 Volume of right pyramid = $\frac{1}{3} \times \text{base area} \times \text{height}$

11 Sum of interior angles of a polygon = $(n - 2) \times 180^\circ$

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

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

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

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

- 1 Express 5.741×10^{-4} as a single number.
Ungkapkan 5.741×10^{-4} sebagai nombor tunggal.
- A 0.05741
B 0.005741
C 0.0005741
D 0.00005741
- 2 Round of 85 462 correct to three significant figures.
Bundarkan 85 462 betul kepada tiga angka bererti.
- A 854
B 855
C 85 400
D 85 500
- 3 $6.4 \times 10^{-12} + 4.6 \times 10^{-13} =$
- A 1.10×10^{-12}
B 1.10×10^{-13}
C 6.86×10^{-12}
D 6.86×10^{-13}
- 4 $\frac{0.05187}{3.14 \times 1.258} =$
- A 1.1313×10^{-2}
B 1.1313×10^2
C 2.0781×10^{-2}
D 2.0781×10^2
- 5 Given that $111010_2 = q_5$, then q is
Diberi $111010_2 = q_5$, maka q ialah
- A 103
B 213
C 214
D 312
- 6 $11101_2 - 1111_2 =$
- A 101010_2
B 101110_2
C 1110_2
D 101101_2

- 7 In Diagram 1, $PQRST$ is a regular pentagon. UTR is a straight line.
 Dalam Rajah 1, $PQRST$ ialah pentagon sekata. UTR ialah garis lurus.

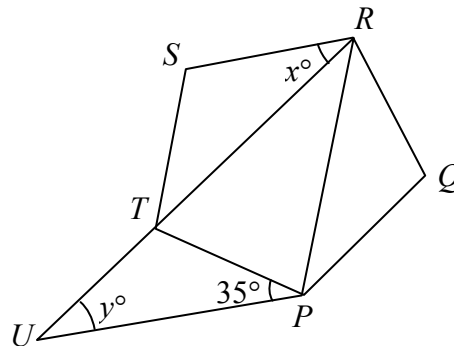


Diagram 1
Rajah 1

The value of $x + y =$

Nilai $x + y =$

- A 36
 B 73
 C 109
 D 146
- 8 In Diagram 2, UTV is a tangent to the circle $PQST$ at T . PQR and RST are straight lines.
 Dalam Rajah 2, UTV ialah tangen kepada bulatan $PQST$ di T . PQR dan RST adalah garis lurus.

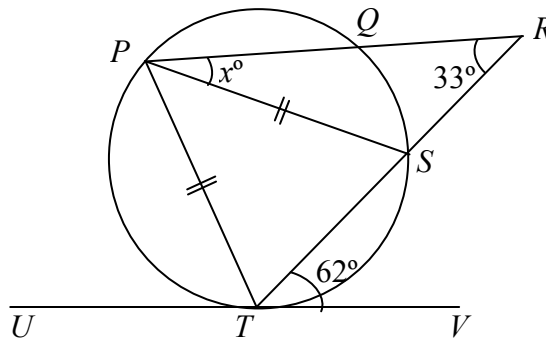


Diagram 2
Rajah 2

Calculate the value of x .

Hitungkan nilai x .

- A 11.5
 B 23
 C 26
 D 29

- 9 Diagram 3 shows two pentagons, R and S , drawn on square grids.

Rajah 3 menunjukkan dua pentagon R dan S , dilukis pada grid segiempat sama.

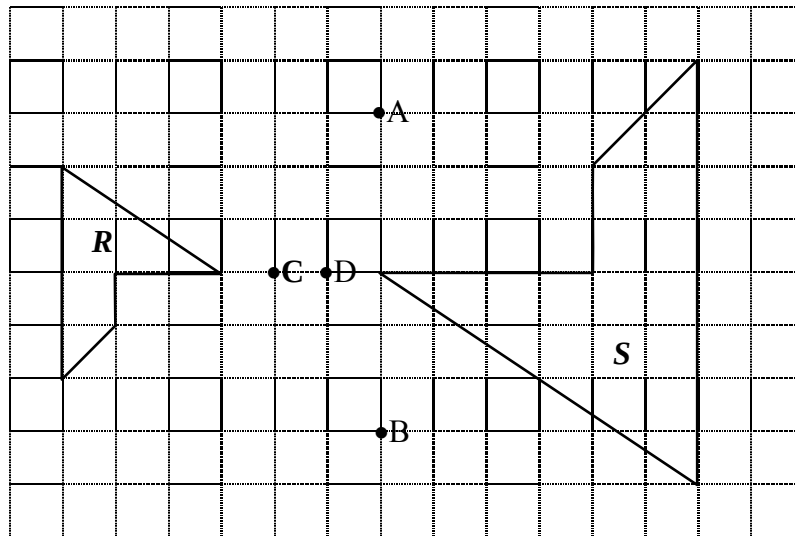


Diagram 3

Rajah 3

S is the image of R under an enlargement.

Which of the point **A**, **B**, **C** or **D** is the centre of the enlargement?

S adalah imej bagi R di bawah suatu pembesaran.

*Yang manakah di antara titik **A**, **B**, **C** atau **D** ialah pusat pembesaran?*

- 10 Diagram 4 is drawn on a Cartesian plane.
Rajah 4 dilukis pada suatu satah Cartesan.

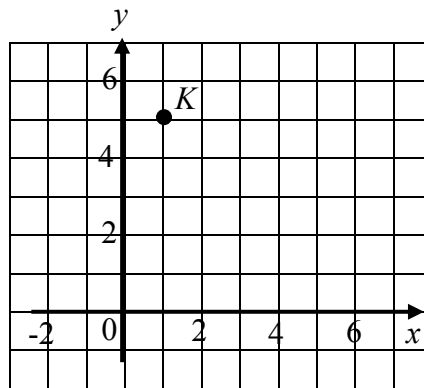


Diagram 4
Rajah 4

Given

R = clockwise rotation of 90° about the centre $(3, 2)$

S = reflection in the line $x = 5$.

Find the coordinates of the image of point K under the combined transformation SR .

Diberi

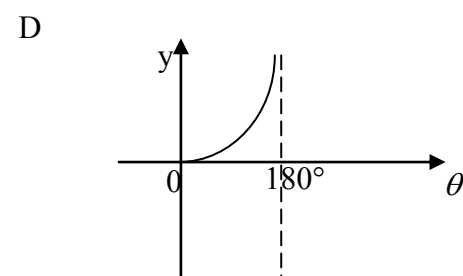
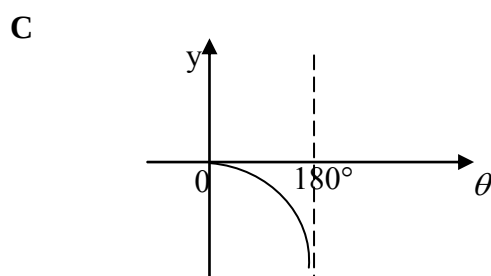
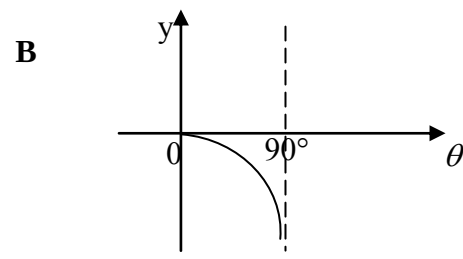
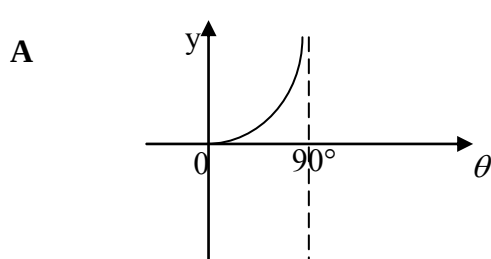
R = putaran 90° ikut arah jam pada pusat $(3, 2)$

S = pantulan pada garis $x = 5$

Cari koordinat ime titik K di bawah gabungan penjelmaan SR .

- A (3, 5)
 B (3, 4)
 C (4, 3)
 D (4, 4)

- 11 Which of the following represents part of the graph $y = -\tan \theta$?
Antara berikut, yang manakah mewakili sebahagian graf $y = -\tan \theta$?



- 12 In Diagram 5, TQRS and RUV are straight lines. Q is the midpoint of TR. Given $PR = 2RU = 10 \text{ cm}$ and $\sin x^\circ = \frac{4}{5}$. Find the value of $\cos y^\circ$.

Dalam Rajah 1, TQRS dan RUV ialah garis lurus. Q adalah titik tengah bagi garis lurus TR. Diberi bahawa $PR = 2RU = 10 \text{ cm}$ dan $\sin x^\circ = \frac{4}{5}$. Cari nilai $\cos y^\circ$.

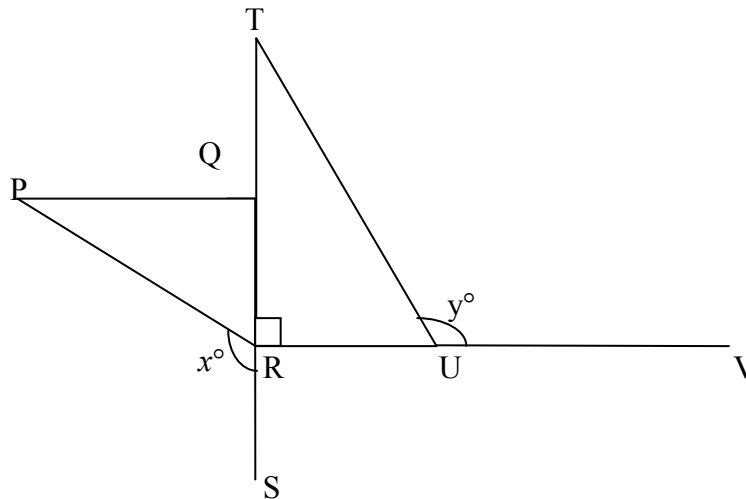


Diagram 5
Rajah 5

- A $\frac{12}{13}$
- B $-\frac{10}{13}$
- C $\frac{5}{13}$
- D $-\frac{5}{13}$

- 13 In Diagram 6, O is the origin, OT and OR are straight lines on the Cartesian plane. The value of $\sin \theta$ is

Dalam Rajah 6, O ialah asalan, OT dan OR adalah garis lurus pada suatu satah Cartesian. Nilai bagi $\sin \theta$ adalah

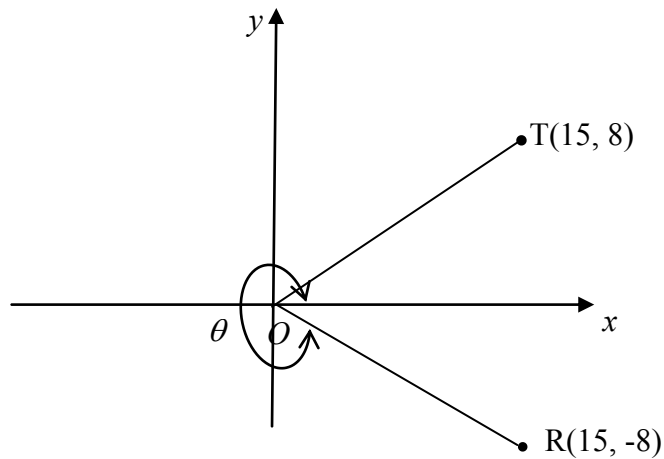


Diagram 6
Rajah 6

- A $\frac{8}{17}$
B $-\frac{8}{17}$
C $\frac{8}{15}$
D $-\frac{8}{15}$

- 14 Diagram 7 shows a cuboid.
Rajah 7 menunjukkan sebuah kuboid.

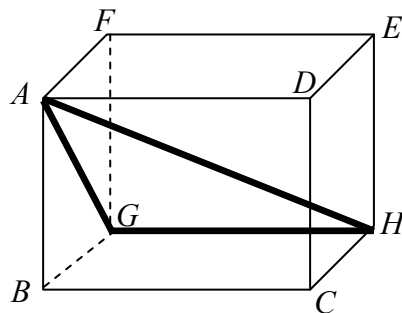


Diagram 7
Rajah 7

Name the angle between the plane AHG and the plane $BCHG$
Namakan sudut di antara satah AHG dan satah $BCHG$

- A $\angle AGH$
 B $\angle GAB$
 C $\angle AGB$
 D $\angle AHC$
- 15 Diagram 8 shows a box and a tower on a horizontal plane. The angle of depression of the box from the top of the tower is 48° .
Rajah 8 menunjukkan sebuah kotak dan sebuah menara di atas satah mengufuk. Sudut tunduk kotak tersebut dari atas menara adalah 48° .



Diagram 8
Rajah 8

If the height of the tower is 202 m, find the distance between the base of the tower and the box, in metre.

Jika tinggi menara itu adalah 202 m, cari jarak di antara tapak menara dengan kotak tersebut, dalam meter.

- A 181.78
 B 181.88
 C 224.34
 D 224.44

- 16 In Diagram 9, PQ and ST are two vertical poles on a horizontal plane. R is a point on PQ such that $RQ = ST$.
 Dalam Rajah 9, PQ dan ST adalah dua batang tiang tegak pada satah mengufuk.
 R adalah satu titik pada tiang PQ dengan keadaan $RQ = ST$.

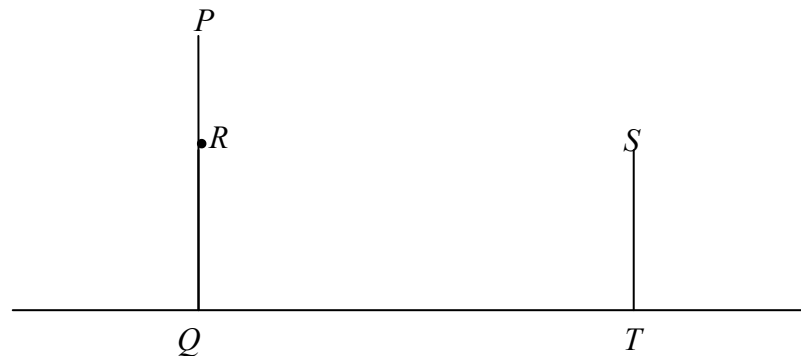


Diagram 9
Rajah 9

The angle of elevation of P from S is
 Sudut dongakan P dari S ialah

- A $\angle SPR$
 B $\angle SRP$
 C $\angle PSR$
 D $\angle RSQ$
- 17 In Diagram 10, KRS is a tangent to the circle RQP with centre O , at R . QPS is a straight line.
 Dalam Rajah 10, KRS adalah tangen kepada bulatan RQP berpusat O , di R . QPS ialah garis lurus.

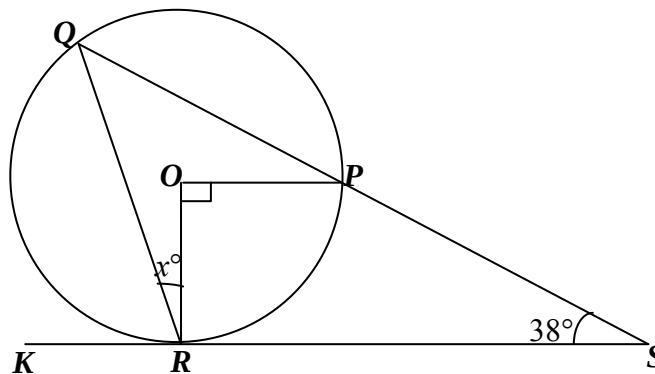


Diagram 10
Rajah 10

Find the value of x .
 Cari nilai x .

- A 7
 B 17
 C 45
 D 52

- 18 Given the speed of a car is $(3x - 4) \text{ ms}^{-1}$. Find the distance of the car that travels in $(2 + x)$ seconds.

Diberi laju sebuah kereta ialah $(3x - 4) \text{ ms}^{-1}$. Carikan jarak perjalanan kereta itu dalam masa $(2 + x)$ saat.

- A $3x^2 - 2x - 8$
- B $3x^2 + 2x - 8$
- C $4x - 2$
- D $2x - 6$

- 19 Express $\frac{3y+4}{3} - \frac{2y-3}{6y}$ as a single fraction in its simplest form.

Ungkapkan $\frac{3y+4}{3} - \frac{2y-3}{6y}$ sebagai satu pecahan tunggal dalam bentuk termudah.

- A $\frac{2y^2 + 2y - 1}{2y}$
- B $\frac{2y^2 + 2y + 1}{2y}$
- C $\frac{6y^2 + 6y - 3}{6y}$
- D $\frac{6y^2 + 6y + 3}{6y}$

- 20 In Diagram 11, A and B are two points on a common parallel of latitude $y^\circ S$.
Dalam Rajah 11, A dan B adalah dua titik yang berada pada selarian latitud $y^\circ S$.

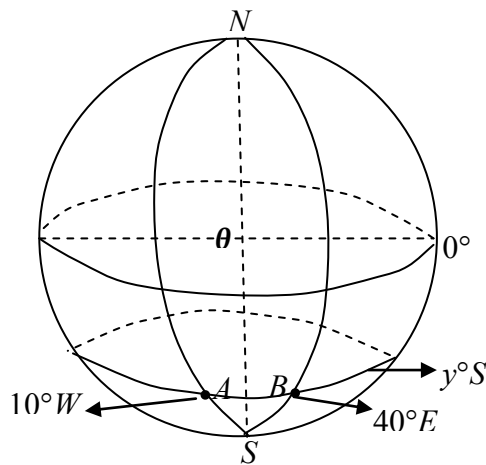


Diagram 11
 Rajah 11

If an aeroplane flew at 200 knots from A to B for 1.2 hours, the value of y is
Jika sebuah kapal terbang terbang dari A ke B dengan kelajuan 22 knot selama 1.2 jam, nilai y ialah

- A $82^\circ 20'$
 B $85^\circ 25'$
 C $87^\circ 42'$
 D $88^\circ 34'$

- 21 Given that $\frac{d}{t} = \frac{m+1}{2m}$, express m in terms of d and t .

Diberi bahawa $\frac{d}{t} = \frac{m+1}{2m}$, ungkapkan m dalam sebutan d dan t .

A $m = \frac{t}{2d-t}$

B $m = \frac{t}{t-2d}$

C $m = \frac{t}{2d+t}$

D $m = \frac{t}{t+2d}$

- 22 Given $\frac{x-1}{4} + \frac{5}{2} = x$, calculate the value of x .

Diberi $\frac{x-1}{4} + \frac{5}{2} = x$, hitungkan nilai x .

- A -4
- B -3
- C 3
- D 4

- 23 Simplify :

Permudahkan :

$$\frac{p^{\frac{5}{3}}}{p^{\frac{4}{3}}}$$

- A $\sqrt{p}$
- B $\sqrt[3]{p}$
- C $\frac{1}{\sqrt{p}}$
- D $\frac{1}{\sqrt[3]{p}}$

- 24 Simplify:

Permudahkan:

$$\frac{p^3 \times (256q^8)^{\frac{1}{4}}}{(16p^2q^6)^{\frac{1}{2}}}$$

- A $4p^2q$
- B $4p^2q^{-1}$
- C p^2q
- D p^2q^{-1}

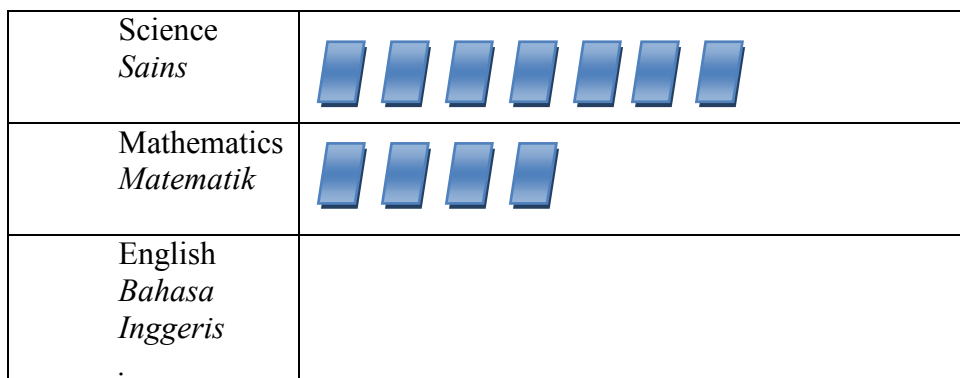
- 25 Solve the simultaneous linear inequalities $4 - x \leq 8$ and $3x + 4 < 7$.

Selesaikan ketaksamaan linear serentak $4 - x \leq 8$ dan $3x + 4 < 7$.

- A $-4 \leq x < 1$
 B $-1 \leq x < 4$
 C $-5 \leq x < 2$
 D $-4 < x < 1$

- 26 Diagram 12 is a pictograph showing the number of sales of three types of books in one week. Number of English books sold are not shown.

Rajah 12 ialah pictograf yang menunjukkan jualan tiga jenis buku dalam satu minggu. Bilangan buku Bahasa Inggeris yang telah dijual tidak ditunjukkan.



Represents 12 books

Mewakili 12 buah buku

Diagram 12
Rajah 12

If the sales of Mathematics books were 20% of total sales in the week, calculate the number of English books sold.

Jika jualan buku Matematik ialah 20% daripada jumlah jualan minggu tersebut, hitung bilangan buku Bahasa Inggeris yang telah dijual.

- A 11
 B 20
 C 108
 D 400

- 27 Table 1 shows the score distribution of a group of pupils.
Jadual 1 menunjukkan taburan skor yang diperolehi oleh sekumpulan murid.

Score <i>Skor</i>	0	1	2	3
Frequency <i>Kekerapan</i>	4	x	4	5

Table 1
Jadual 1

Given that the value of mean is 1.5, calculate the value of x .
Diberi nilai min ialah 1.5, hitungkan nilai x .

- A 6
 B 7
 C 8
 D 9

- 28 Diagram 13 shows graf of function of $y = x^2 - 16$.
Rajah 13 menunjukkan graf bagi fungsi $y = x^2 - 16$.

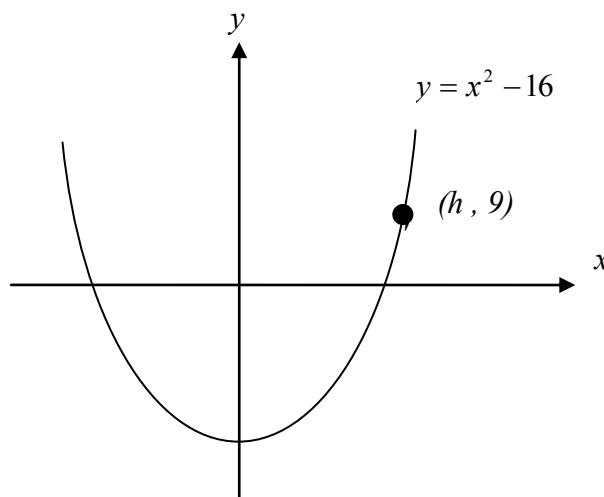


Diagram 13
Rajah 13

Find the value of h .
Carikan nilai h .

- A 2
 B 3
 C 4
 D 5

- 29 Diagram 14 is a Venn Diagram showing universal set ξ , set P dan set Q .
Rajah 14 ialah gambarajah Venn yang menunjukkan set semesta ξ , set P dan set Q .

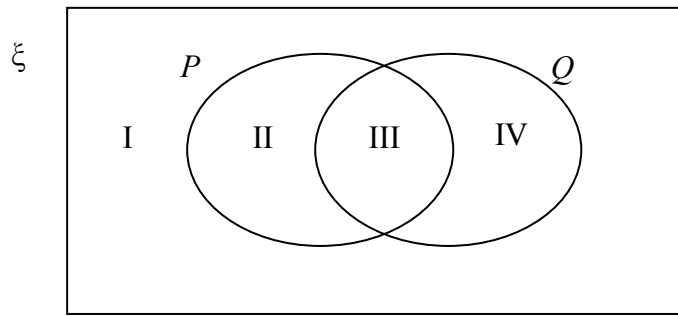


Diagram 14
 Rajah 14

Kawasan yang manakah menunjukkan set Q' .
Which region represent the set Q' .

- A** I
B II
C I and II
I dan II
D I, II and III
I, II dan III
- 30 Diberi bahawa set $H = \{1, 3\}$, set $J = \{1, 2, 3, 4, 5\}$, set $R = \{0, 1, 3, 5, 6, 7, 8, 9\}$
 dan set $\xi = H \cup J \cup R$, cari $n(H \cup J)$.
*Given that set $H = \{1, 3\}$, set $J = \{1, 2, 3, 4, 5\}$, set $R = \{0, 1, 3, 5, 6, 7, 8, 9\}$
 and set $\xi = H \cup J \cup R$, find $n(H \cup J)$.*
- A** 4
B 5
C 6
D 7
- 31 List all the subsets of set $\{m, n\}$.
Senaraikan semua subset bagi set $\{m, n\}$.
- A** $\{m\}, \{n\}$
B $\emptyset, \{m\}, \{n\}$
C $\{\emptyset\}, \{m\}, \{n\}$
D $\emptyset, \{m\}, \{n\}, \{m, n\}$

- 32 Find the y -intercept of the straight line $-14y = -11x + 20$.

Cari pintasan- y untuk garis lurus $-14y = -11x + 20$.

- A $-\frac{10}{7}$
- B $-\frac{11}{14}$
- C $-\frac{14}{11}$
- D $\frac{10}{7}$

- 33 Diagram 15 shows two straight lines PQ and QR on a Cartesian plane.
Rajah 15 menunjukkan dua garis lurus PQ dan QR pada satah Cartesan.

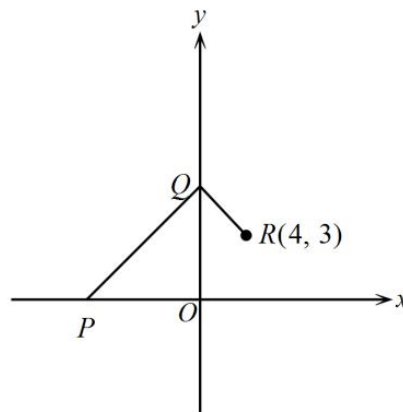


Diagram 15
Rajah 15

The length of PQ is 10 units and the gradient of QR is $-\frac{3}{4}$. Find x -intercept of PQ .

Panjang PQ ialah 10 units dan kecerunan QR ialah $-\frac{3}{4}$. Cari pintasan- x bagi PQ .

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

- 34 Table 2 shows the number of students participating in an Anti-drug Campaign from two schools, *S* and *T*.

Jadual 2 menunjukkan bilangan pelajar yang menyertai suatu Kempen Anti Dadah dari dua buah sekolah, S dan T.

	School S <i>Sekolah S</i>	School T <i>Sekolah T</i>
Lelaki <i>Boy</i>	20	15
Perempuan <i>Girl</i>	17	13

Table 2
Jadual 2

A student is chosen at random from the students who participated in the Anti-drug Campaign. Find the probability that a boy from School *T* will be chosen.

Seorang pelajar dipilih secara rawak daripada pelajar-pelajar yang menyertai Kempen Anti Dadah. Cari kebarangkalian seorang pelajar lelaki dari Sekolah T akan dipilih.

- A $\frac{1}{5}$
- B $\frac{13}{28}$
- C $\frac{15}{28}$
- D $\frac{3}{13}$

- 35 A box contains 7 white balls and 10 black balls. Yahya put another 1 white ball and 3 black balls into the box. A ball is chosen at random from the box. What is the probability that a white ball is chosen?

Sebuah kotak mengandungi 7 biji bola putih dan 10 biji bola hitam. Yahya memasukkan lagi 1 biji bola putih dan 3 biji bola hitam ke dalam kotak itu. Sebiji bola dipilih secara rawak. Apakah kebarangkalian sebiji bola putih akan dipilih?

- A $\frac{7}{17}$
- B $\frac{7}{8}$
- C $\frac{8}{13}$
- D $\frac{8}{21}$

36 It is given that $h \propto \frac{1}{q^2}$ and $h = 2$ when $q = 3$. Calculate the value of h when $q = 9$.

Diberi bahawa $h \propto \frac{1}{q^2}$ dan $h = 2$ apabila $q = 3$. Hitung nilai h apabila $q = 9$.

- A $\frac{1}{9}$
- B $\frac{2}{9}$
- C $\frac{9}{2}$
- D $\frac{1}{81}$

37 It is given that Y varies directly as X^2 and $Y = 4$ when $X = 1$. If $Z = \frac{5}{X}$, calculate the value of YZ when $X = 2$.

Diberi bahawa Y berubah secara langsung dengan X^2 dan $Y = 4$ apabila $X = 1$. Jika

$Z = \frac{5}{X}$ hitung nilai YZ apabila $X = 2$.

- A 90
- B 50
- C 40
- D 30

- 38 Table 3 shows some values of the variables d , x and y .
Jadual 3 menunjukkan beberapa nilai bagi pembolehubah d , x , dan y .

d	x	y
4	3	p
8	6	4

Table 3
Jadual 3

Given that $d \propto \frac{x^2}{y}$, calculate the value of p .

Diberi bahawa $d \propto \frac{x^2}{y}$, hitung nilai p .

A $\frac{3}{4}$

B $\frac{2}{3}$

C 4

D 2

- 39 Given that $(-4n \ 8) \begin{pmatrix} 8 & -6 \\ -2n & -8 \end{pmatrix} = (-96 \ -16)$, find the value of n .

Diberi $(-4n \ 8) \begin{pmatrix} 8 & -6 \\ -2n & -8 \end{pmatrix} = (-96 \ -16)$, cari nilai n .

A 2

B $\frac{3}{2}$

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

D -2

40 $\begin{pmatrix} 8 & -3 & -6 \\ -2 & 3 & -10 \end{pmatrix} \begin{pmatrix} -3 \\ 3 \\ 5 \end{pmatrix} =$

A $\begin{pmatrix} -63 \\ 35 \end{pmatrix}$

B $\begin{pmatrix} 24 \\ -35 \end{pmatrix}$

C $\begin{pmatrix} -24 \\ -35 \end{pmatrix}$

D $\begin{pmatrix} -63 \\ -35 \end{pmatrix}$

END OF QUESTION PAPER

KERTAS SOALAN TAMAT

NAMA :

TINGKATAN :



BAHAGIAN PENGURUSAN SEKOLAH BERASRAMA PENUH
DAN SEKOLAH KECEMERLANGAN
KEMENTERIAN PENDIDIKAN MALAYSIA

PENTAKSIRAN DIAGNOSTIK AKADEMIK SBP 2013
PERCUBAAN SIJIL PELAJARAN MALAYSIA

MATHEMATICS

Kertas 2

2 Jam 30 Minit

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

1. Kertas soalan ini mengandungi dua bahagian : **Bahagian A** dan **Bahagian B**. Jawab **semua** soalan.
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.
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	5	
	6	6	
	7	4	
	8	6	
	9	6	
	10	5	
	11	6	
B	12	12	
	13	12	
	14	12	
	15	12	
Jumlah			

Kertas ini mengandungi **25** halaman bercetak

MATHEMATICAL FORMULAE

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

RELATIONS

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

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

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

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

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

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

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

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

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

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

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

$$12 \quad \text{Pythagoras Theorem}$$

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

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

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

SHAPES AND SPACE

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

$$2 \quad \text{Circumference of circle} = \pi d = 2\pi r$$

$$3 \quad \text{Area of circle} = \pi r^2$$

$$4 \quad \text{Curved surface area of cylinder} = 2\pi rh$$

$$5 \quad \text{Surface area of sphere} = 4\pi r^2$$

$$6 \quad \text{Volume of right prism} = \text{cross sectional area} \times \text{length}$$

$$7 \quad \text{Volume of cylinder} = \pi r^2 h$$

$$8 \quad \text{Volume of cone} = \frac{1}{3} \pi r^2 h$$

$$9 \quad \text{Volume of sphere} = \frac{4}{3} \pi r^3$$

$$10 \quad \text{Volume of right pyramid} = \frac{1}{3} \times \text{base area} \times \text{height}$$

$$11 \quad \text{Sum of interior angles of a polygon} = (n - 2) \times 180^\circ$$

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

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

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

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

Section A
Bahagian A
 [52 marks]
 [52 markah]

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

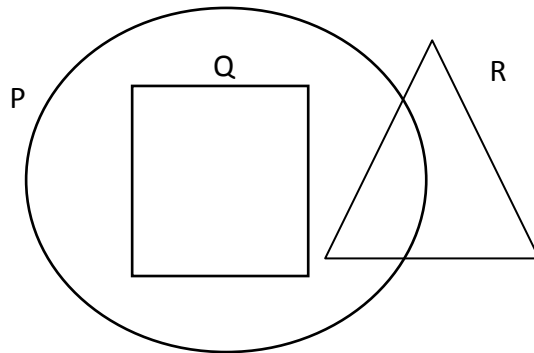
- 1 The Venn diagram in the answer space shows sets P, Q and R such that the universal set $\xi = P \cup Q \cup R$. On the diagrams in the answer space, shade the sets.
 Gambar rajah Venn di ruang jawapan menunjukkan set P, Q dan R dengan keadaan set semesta $\xi = P \cup Q \cup R$. Pada rajah di ruang jawapan, lorek set

- (a) $P \cap R$
 (b) $Q \cup (P' \cap R)$

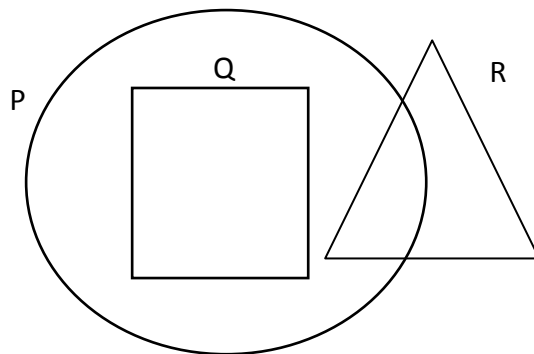
[3 marks]
 [3 markah]

Answer /Jawapan:

(a)



(b)



- 2 Calculate the value of k and of m that satisfy the following simultaneous linear equations:

Hitung nilai k dan nilai m yang memuaskan persamaan linear serentak berikut:

$$2k - m = 4$$

$$4k + \frac{1}{3}m = 1$$

[4 marks]

[4 markah]

Answer /Jawapan:

-
- 3 Using factorisation, solve the following quadratic equation:

Menggunakan pemfaktoran, selesaikan persamaan kuadratik berikut :

$$3x(x-3) = 4 + 2x$$

[4 marks]

[4 markah]

Answer /Jawapan:

- 4 Diagram 4 shows a right prism. An isosceles triangle PQR is the uniform cross-section of the prism. W is the midpoint of TU.

Rajah 4 menunjukkan sebuah prisma tegak. Segi tiga sama kaki PQR ialah keratan rentas bagi prisma tersebut. W ialah titik tengah bagi TU.

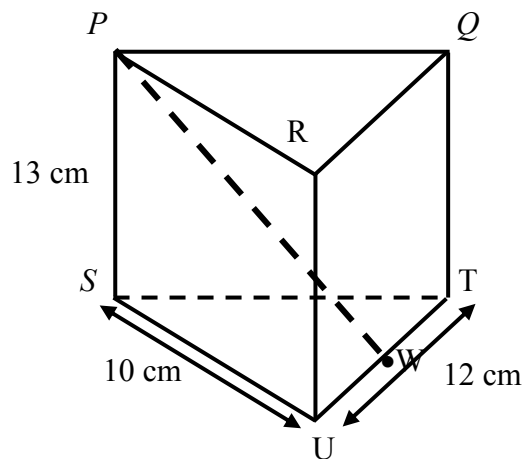


Diagram 4
Rajah 4

- (a) Name the angle between the line PW and the base STU.
Namakan sudut di antara garis PW dengan tapak STU.
- (b) Calculate the angle between the line PW and the base STU.
Hitung sudut di antara garis PW dengan tapak STU.

[3 marks]
[3 markah]

Answer /Jawapan:

(a)

(b)

- 5 a) Determine whether the following sentence is a "statement" or a "non-statement".

Tentukan sama ada ayat berikut adalah "pernyataan" atau "bukan pernyataan"

$$k - 3 = 5$$

[1 mark]
[1 markah]

- b) Write the converse of the following statement and hence determine whether its converse is true or false

$$\text{If } r = 0 \text{ then } 10^r = 1$$

Tuliskan akas bagi pernyataan berikut dan seterusnya tentukan sama ada akas tersebut adalah benar atau palsu

$$\text{Jika } r = 0 \text{ maka } 10^r = 1$$

[2 marks]
[2 markah]

- c) All spheres with radius r cm, have a surface area of $4\pi r^2$ cm². Make one conclusion by deduction on the surface area of Sphere A with radius 2 cm.
*Semua sfera dengan jejari r cm, mempunyai luas permukaan $4\pi r^2$ cm².
Buatkan satu kesimpulan secara deduksi bagi luas permukaan Sfera A dengan jejari 2 cm.*

[2 marks]
[2 markah]

Answer / Jawapan:

(a)

(b)

(c)

- 6 In Diagram 6, O is the origin, point P lies on the y -axis and point Q lies on the x -axis. The straight line PR is parallel to the straight line QS . The equation of straight QS is $y + 2x + 4 = 0$

Dalam Rajah 6, O adalah asalan, titik P terletak pada paksi y dan titik Q terletak pada paksi x . Garis lurus PR adalah selari dengan garis lurus QS . Persamaan garis lurus QS adalah $y + 2x + 4 = 0$.

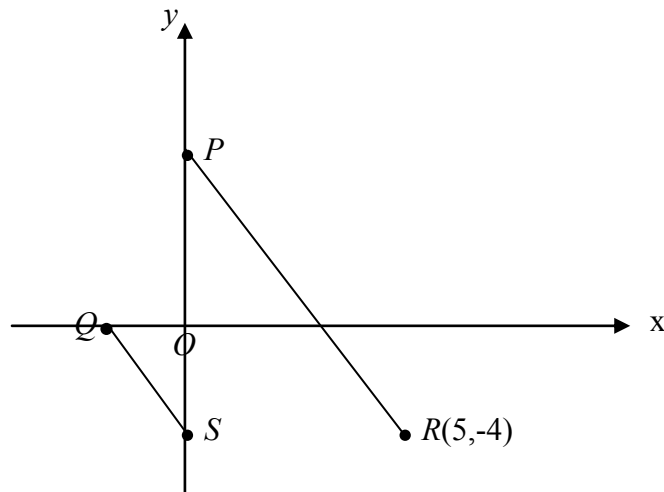


Diagram 6
Rajah 6

- (a) State the equation of the straight line SR
Nyatakan persamaan garis lurus SR

[1 mark]
[1 markah]

- (b) Find the equation of the straight line PR
Cari persamaan garis lurus PR

[3 marks]
[3 markah]

- (c) Find the midpoint of PQ
Cari titik tengah bagi PQ

[2 marks]
[2 markah]

Answer / Jawapan:

(a)

(b)

(c)

- 7 Diagram 7 shows a solid formed by removing a cone from a cylinder. The radius of the cylinder is 7 cm. The cylinder and the cone share the same height. It is given that the volume of the remaining solid is 1232 cm^3 .

Rajah 7 menunjukkan sebuah pepejal yang dibentuk dengan mengeluarkan sebuah kon daripada sebuah silinder. Jejari bagi silinder itu ialah 7 cm. Silinder dan kon tersebut mempunyai ketinggian yang sama. Diberi bahawa isipadu pepejal yang tinggal ialah 1232 cm^3 .

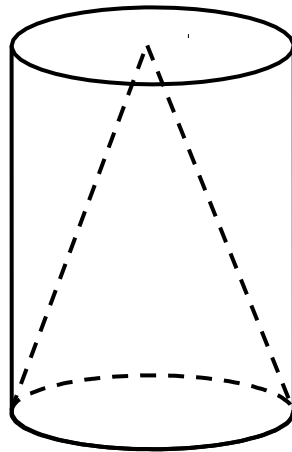


Diagram 7

Rajah 7

Using $\pi = \frac{22}{7}$, calculate the height, in cm, of the cylinder.

Menggunakan $\pi = \frac{22}{7}$, hitungkan tinggi, dalam cm, silinder itu.

[6 marks]
[6 markah]

Answer / Jawapan:

- 8 a) Given that $\frac{1}{k} \begin{pmatrix} 4 & -3 \\ 6 & -5 \end{pmatrix} \begin{pmatrix} -5 & 3 \\ -6 & m \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$. Find the value of k and m .

Diberi bahawa $\frac{1}{k} \begin{pmatrix} 4 & -3 \\ 6 & -5 \end{pmatrix} \begin{pmatrix} -5 & 3 \\ -6 & m \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$. Cari nilai k dan m .

- b) Using matrices, find the value of x and y which satisfy the following simultaneous linear equation:

Dengan menggunakan kaedah matriks, hitungkan nilai x dan y yang memuaskan persamaan linear serentak berikut:

$$4x - 3y = 17$$

$$6x - 5y = 27$$

[6 marks]
[6 markah]

Answer / Jawapan:

a)

b)

- 9 In Diagram 9, O is the centre of circle with diameter $KON = 14$ cm. KO and ON are diameter of two semicircles.
Dalam Rajah 9, O ialah pusat bulatan yang berdiameter $KON = 14$ cm. KO dan ON ialah diameter bagi dua semibulatan masing-masing .

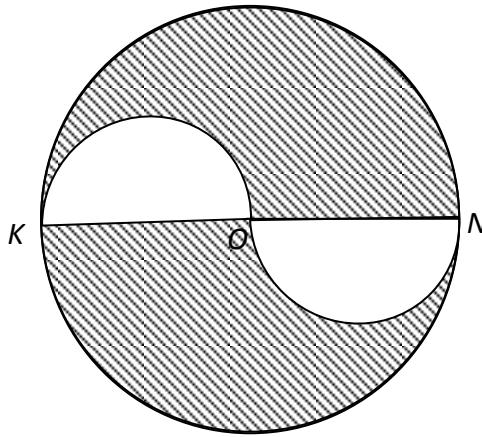


Diagram 9
Rajah 9

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

Dengan menggunakan $\pi = \frac{22}{7}$, hitungkan

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

[6 marks]
 [6 markah]

Answer / Jawapan:

a)

b)

- 10 Diagram 10 shows four cards in box X and three cards in box Y .
Rajah 10 menunjukkan empat kad dalam kotak X dan tiga kad dalam kotak Y .

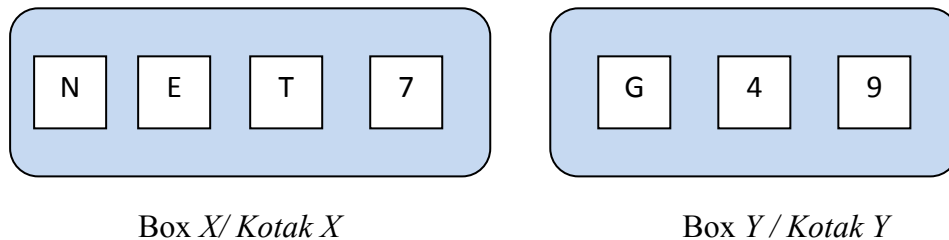


Diagram 10
Rajah 10

Two cards are picked at random, the first card is picked from box X and the second card is picked from box Y .

Dua kad dipilih secara rawak, kad pertama dipilih dari kotak X dan kad kedua dipilih dari kotak Y .

- (a) List the sample space.

Senaraikan ruang sampel.

- (b) By listing all the possible outcomes of the events, find the probability that,
Dengan menyenaraikan kesemua kesudahan peristiwa yang mungkin, cari kebarangkalian bahawa,

- (i) both cards picked are labelled with letters,
kedua-dua kad yang dipilih dilabel dengan huruf,
- (ii) a card labelled with a consonant or the card labelled with an even number are picked.
satu kad dilabel dengan suatu konsonan atau kad yang dilabel dengan nombor genap dipilih.

[5 marks]

[5 markah]

Answer / Jawapan:

a)

b) (i)

(ii)

- 11 Diagram 11 shows a speed-time graph of the movement of a particle for a period of T seconds.

Rajah 11 menunjukkan graf laju-masa bagi pergerakan sebutir zarah bagi tempoh T saat

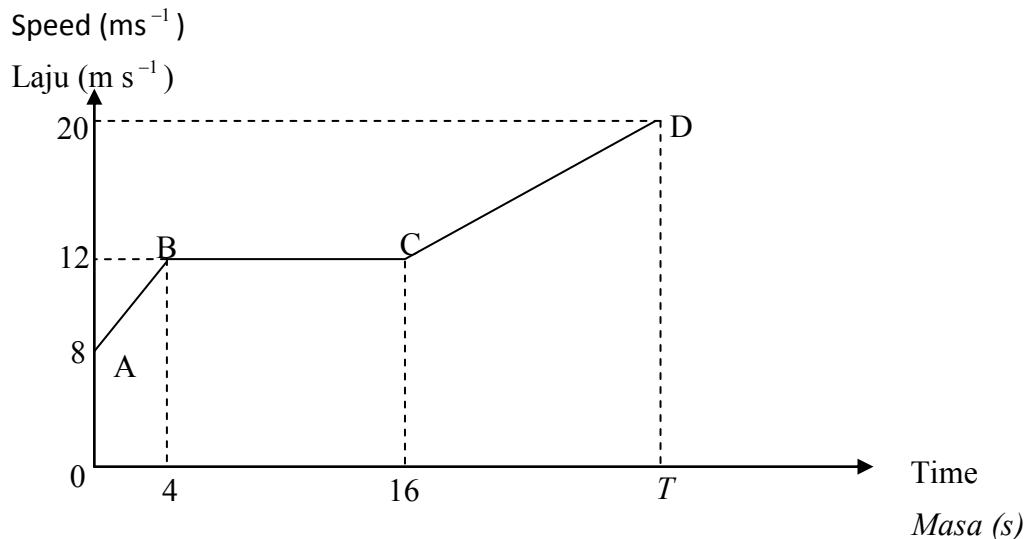


Diagram 11
Rajah 11

Calculate

Hitungkan

- (a) the rate of change in speed of , in m s^{-2} , in the first four seconds,
Kadar perubahan laju zarah itu, dalam m s^{-2} , dalam tempoh 4 saat pertama,
- (b) the distance, in m, travelled at a uniform speed,
jarak, dalam m, yang dilalui zarah itu dengan kadar laju seragam,
- (c) the value of T , if the total distance travelled is 328 m.
nilai T , jika jumlah jarak yang dilalui ialah 328 m.

[6 marks]

[6 markah]

Answer / Jawapan:

(a)

(b)

(c)

Section B
Bahagian B

[48 marks]

[48 markah]

Answer **all** questions in this section.

Jawab **semua** soalan di bahagian ini

- 12 (a) Complete the table in the answer space for the equation $y = x^3 - 10x + 15$ by writing down the values of y when $x = -1$ and $x = 2$
Lengkapkan jadual pada ruang jawapan bagi persamaan $y = x^3 - 10x + 15$ dengan menulis nilai-nilai y apabila $x = -1$ dan $x = 2$
[2 marks]
[2 markah]
- (b) By using a scale of 2 cm to 1 unit on the x -axis and 2 cm to 5 units on the y -axis, draw the graph of $y = x^3 - 10x + 15$ for $-4 \leq x \leq 4$
Dengan menggunakan skala 2 cm kepada 1 unit pada paksi x dan 2 cm kepada 5 unit pada paksi y , lukis graf $y = x^3 - 10x + 15$ bagi $-4 \leq x \leq 4$
[4 marks]
[4 markah]
- (c) From your graph, find
Dari graf anda, carikan
(i) the value of y when $x = -2.7$
nilai y bila $x = -2.7$
(ii) the values of x when $y = 8$
Nilai-nilai x bila $y = 8$
[2 marks]
[2 markah]
- (d) Draw a suitable straight line on your graph to find the values of x which satisfy the equation $x^3 - 14x = -7$ for $-4 \leq x \leq 4$
State the values of x .
*Lukis satu garis lurus yang sesuai pada graf anda untuk mencari semua nilai-nilai x yang memuaskan persamaan $x^3 - 14x = -7$ bagi $-4 \leq x \leq 4$
Nyatakan nilai-nilai x itu.*
[4 marks]
[4 markah]

Answer/Jawapan:

(a)

x	-4	-3	-2	-1	0	1	2	3	4
y	-9	18	27		15	6		12	39

(b) Refer graph
Rujuk graf

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

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

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

$\dots\dots\dots$

$x = \dots\dots\dots$

- 13 (a) Diagram 13.1 shows point P and straight line $y + x = 6$ drawn on a Cartesian plane
Rajah 13.1 menunjukkan titik P dan garis lurus $y + x = 6$ dilukis pada suatu satah Cartesian.

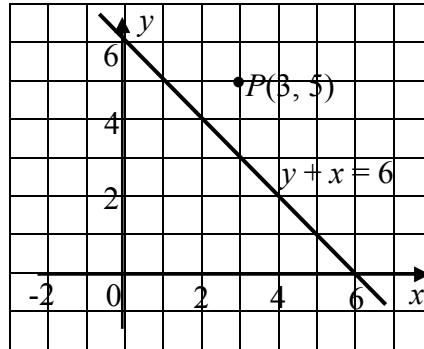


Diagram 13.1
Rajah 13.1

Penjelmaan T ialah satu translasi $\begin{pmatrix} 1 \\ -2 \end{pmatrix}$.

Transformation T is the translation $\begin{pmatrix} 1 \\ -2 \end{pmatrix}$.

Transformation R is reflection at the line $y + x = 6$.

State the coordinates of the image of point P under the following transformations:

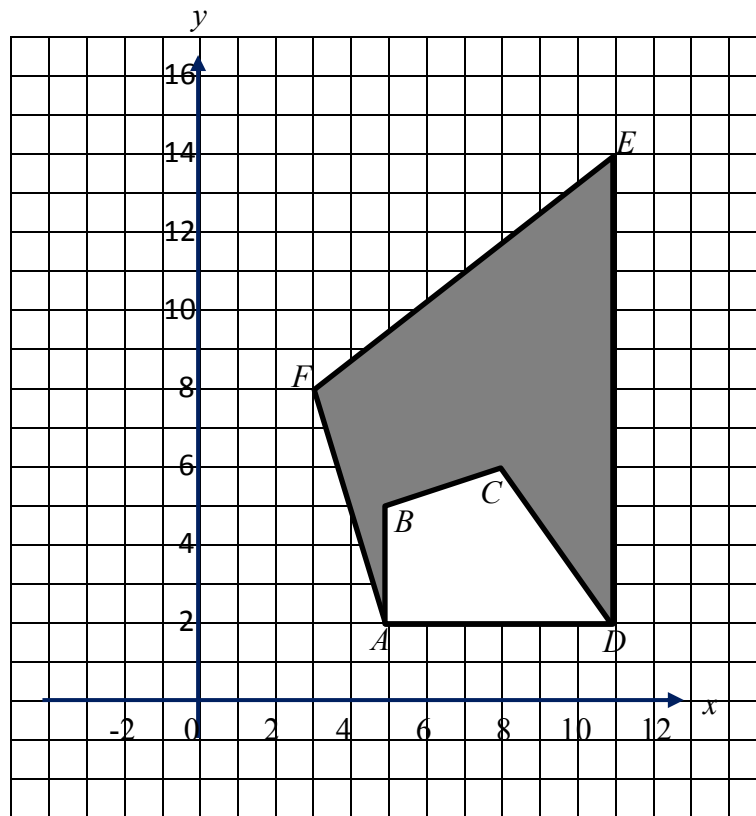
Penjelmaan R ialah satu pantulan pada garis $y + x = 6$.

Nyatakan koordinat imej bagi titik P di bawah penjelmaan berikut:

- (i) T
- (ii) TR

- (b) Rajah 13.2 menunjukkan dua sisiempat, $ABCD$ dan $DAFE$, dilukis pada suatu satah Cartesan.

Diagram 13.2 shows two quadrilaterals, $ABCD$ and $DAFE$, drawn on a Cartesian plane.



Rajah 13.2
Diagram 13.2

- (i) $DAFE$ is the image of $ABCD$ under the combined transformation VU . Describe in full, the transformations:
 $DAFE$ ialah imej bagi $ABCD$ di bawah gabungan penjelmaan VU . Huraikan selengkapnya penjelmaan:
- (a) U
(b) V
- (ii) Given that $ABCD$ represents a region of area 120 cm^2 . Calculate the area, in cm^2 , of the region represented by the shaded region.
Diberi bahawa $ABCD$ mewakili suatu kawasan yang mempunyai luas 120 cm^2 . Hitungkan luas, dalam cm^2 , kawasan yang diwakili oleh rantau berlorek.

Answer/Jawapan

(a) (i)

(ii)

(b) (i) a)

b)

(ii)

- 14 Diagram 14 shows the body masses, in kg, of 40 children in a nursery.
Rajah 14 menunjukkan berat badan, dalam kg, bagi 40 orang kanak-kanak di sebuah tadika.

16	24	34	26	30	40	35	30	26	33
18	20	29	31	30	40	34	36	35	32
33	34	37	35	35	38	39	41	25	25
25	26	27	28	21	23	31	31	38	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 14 di ruang jawapan.
 [3 marks]
 [3 markah]
- (b) State the modal class.
Nyatakan kelas mod.
 [1 mark]
 [1 markah]
- (c) Based on Table 14, calculate the estimated mean of body mass of a child.
Berdasarkan Jadual 14, hitung min anggaran berat badan bagi seorang kanak-kanak.
 [3 marks]
 [3 markah]
- (d) For this part of the question, use the graph paper provided .
 By using a scale of 2 cm to 5 kg on the x-axis and 2 cm to 2 children on the y-axis, draw a histogram for the data.
Untuk ceraiian soalan ini, gunakan kertas graf yang disediakan.
Dengan menggunakan skala 2 cm kepada 5 kg pada paksi-x dan 2 cm kepada 2 orang kanak-kanak pada paksi-y, lukis satu histogram bagi data tersebut.
 [4 marks]
 [4 markah]
- (e) Based on the histogram drawn in 14(d), state the number of children whose mass are more than 35 kg.
Berdasarkan histogram yang dilukis di 14(d), nyatakan bilangan kanak-kanak yang mempunyai berat badan melebihi 35 kg..
 [1 mark]
 [1 markah]

Answer/Jawapan :

(a)

Body mass(kg) <i>Berat badan (kg)</i>	Frequency <i>Kekerapan</i>	Midpoint <i>Titik Tengah</i>
15 – 19		
20 – 24		

Table 14
Jadual 14

(b)

(c)

(d) Refer to your graph
Rujuk graf anda

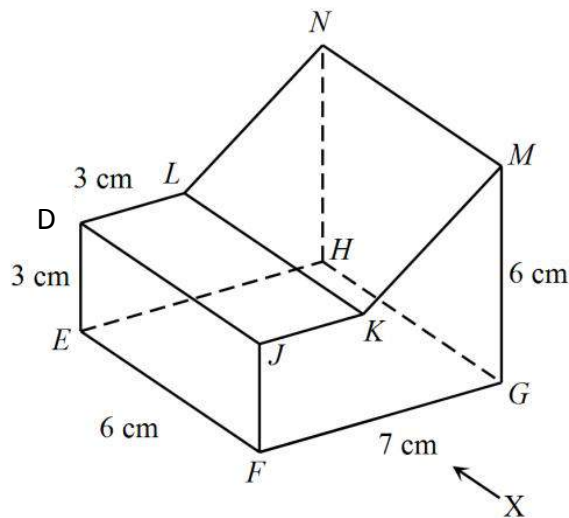
(e)

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

*Anda **tidak** dibenarkan menggunakan kertas graf untuk menjawab soalan ini.*

- (a) Diagram 15.1 shows a solid right prism with rectangular base EFGH on a horizontal ground. The surface FGМКJ is the uniform cross-section of the prism. Rectangle KMNL is an inclined plane and rectangle DJKL is a horizontal plane. JF and MG are vertical edges.

Rajah 15.1 menunjukkan sebuah pepejal berbentuk prisma tegak dengan tapak segiempat tepat EFGH terletak di atas lantai mengufuk. Permukaan FGМКJ ialah keratan rentas seragamnya. Segiempat tepat KMNL ialah satah condong dan segiempat tepat DJKL ialah satah mengufuk. JF dan MG adalah tegak.



Rajah 15.1
Diagram 15.1

Draw to full scale, the elevation of the solid on a vertical plane parallel to FG as viewed from X .

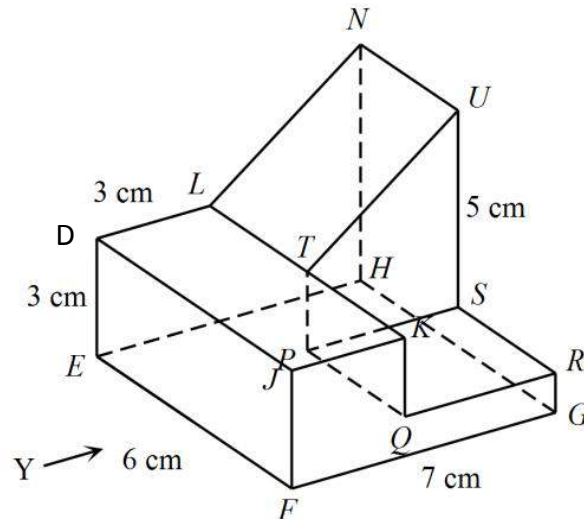
Lukiskan dengan skala penuh, dongakan pepejal itu pada satah mencancang yang selari dengan FG sebagaimana dilihat dari X .

[3 marks]
[3 markah]

Answer/Jawapan:

(a)

- (b) A solid right prism with uniform cross-section $PSUT$ is removed from the solid in Diagram 15.1. The remaining solid is as shown in Diagram 15.2. Rectangle $PQRS$ is a horizontal plane. TP and US are vertical edges. $RS = 3$ cm and $RG = 1$ cm.
- Sebuah pepejal berbentuk prisma tegak dengan keratan rentas seragam $PSUT$ dikeluarkan daripada pepejal Rajah 15.1. Pepejal yang tinggal adalah seperti dalam Rajah 15.2. Segiempat tepat $PQRS$ ialah satah mengufuk. Tepi TP dan US adalah tegak. $RS = 3$ cm dan $RG = 1$ cm.*



Rajah 15.2
Diagram 15.2

Draw to full scale,
Lukis dengan skala penuh,

- (i) the plan of the remaining solid.
peplan pepejal yang tinggal itu.

[4 marks]
[4 markah]

- (ii) the elevation of the remaining solid on a vertical plane parallel to EF as viewed from Y .
dongakan pepejal yang tinggal itu pada satah mencancang yang selari dengan EF sebagaimana dilihat dari Y .

[5 marks]
[5 markah]

Jawapan/ *Answer*:

(b) (i)

(b) (ii)

- 16 $P(35^\circ N, 155^\circ W)$, $Q(35^\circ N, 100^\circ W)$, R and K are four points on the surface of the earth. PR is the diameter of the parallel of latitude $35^\circ N$ and K is located due south of Q .
 $P(35^\circ N, 155^\circ W)$, $Q(35^\circ N, 100^\circ W)$, R dan K ialah empat titik pada permukaan bumi. PR ialah diameter selarian latitud $35^\circ N$ dan K terletak arah ke selatan Q .

- (a) State the location of R

Nyatakan kedudukan R

[3 marks]
[3 markah]

- (b) Calculate the distance, in nautical miles, from Q due east to R , measured along the common parallel of latitude.

Hitung jarak, dalam batu nautical, dari Q arah ke timur ke R , diukur sepanjang selarian latitude sepunya.

[3 marks]
[3 markah]

- (c) Calculate the shortest distance, in nautical miles from P to R , measured along the surface of the earth.

Hitung jarak terpendek, dalam batu nautika, dari P ke R , diukur sepanjang permukaan bumi.

[2 marks]
[2 markah]

- (d) An aeroplane took off from Q and flew due south to K with an average speed of 840 knots. The time taken for the flight is $3\frac{1}{2}$ hours.

Find

Sebuah kapal terbang berlepas dari Q dan terbang arah ke selatan ke K dengan purata laju 840 knot. Masa penerbangan yang diambil ialah $3\frac{1}{2}$ jam.

Cari

- i) the distance, in nautical miles, from Q to K , measured along the meridian.
jarak, dalam batu nautika dari Q ke K diukur sepanjang meridian.
- ii) the latitude of K
latitude K

[4 marks]
[4 markah]

END OF QUESTION PAPER

KERTAS SOALAN TAMAT

PENTAKSIRAN DIAGNOSTIK AKADEMIK SBP 2013

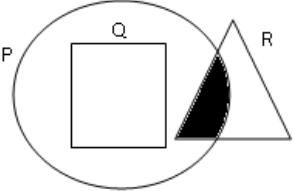
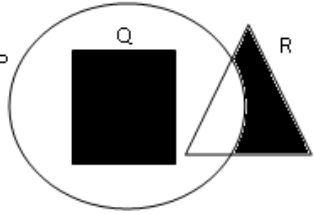
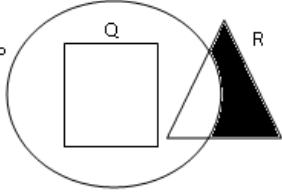
MARKING SCHEME

MATHEMATICS 1449/1

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

PENTAKSIRAN DIAGNOSTIK AKADEMIK SBP 2013

MATHEMATICS 1449/2

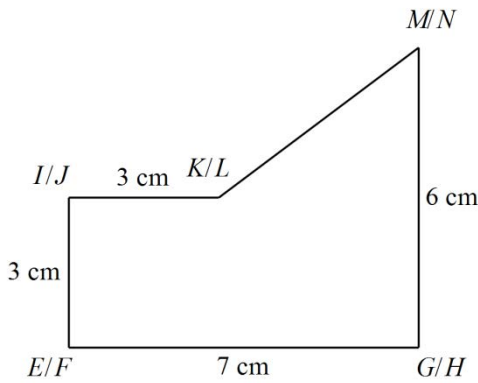
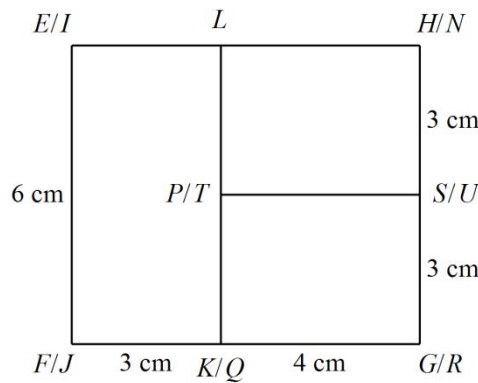
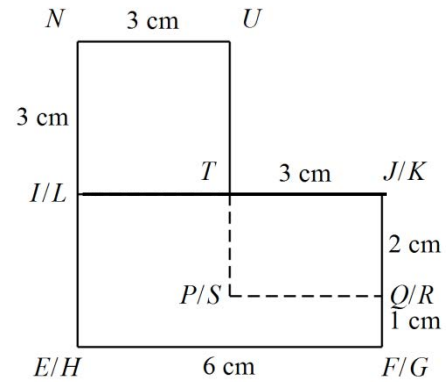
No	MARKING SCHEME	MARK	
1	(a)  (b)  Note: ($P' \cap R$) correctly shaded, award 1 mark 	K1 K2 3	
2	$4k - 2m = 8$ or $12k + m = 3$ Note: Attempt to equate one of the unknown award K1. $-\frac{7}{3}m = 7$ or $14k = 7$ or equivalent OR $k = \frac{4+m}{2}$ or $m = 2k - 4$ or $k = \frac{1 - \frac{1}{3}m}{4}$ or or $m = 3(1 - 4k)$ or equivalent (K1) Note: Attempt to make one of the unknown as the subject, award K1 OR	K1 K1 4	

	$\begin{pmatrix} k \\ m \end{pmatrix} = \frac{1}{(2)(\frac{1}{3}) - (-1)(4)} \begin{pmatrix} \frac{1}{3} & 1 \\ -4 & 2 \end{pmatrix} \begin{pmatrix} 4 \\ 1 \end{pmatrix} \quad \text{K2}$ $k = \frac{1}{2}$ $m = -3$ <i>Note : attempt to write the matrix equation , award 1 mark</i>	N1 N1	
3.	$3x^2 - 11x - 4 = 0$ $(3x+1)(x-4) = 0$ $x = -\frac{1}{3}, 4$	K1 K1 N1N1	4
4	(a) $\angle PWS$ (b) $\tan \angle PWS = \frac{13}{8}$ $\angle PWS = 58.39^\circ$ or $58^\circ 23'$	P1 K1 N1	3
5	5. a) Not a statement b) If $10^r = 1$ then $r = 0$ True c) The surface area of the sphere with radius 2 cm is $4(2)^2\pi = 16\pi$	P1 K1 N1 K1N1	5
6	a) $y = -4$ b) $m_{PR} = m_{QS} = -2$ $-4 = -2(5) + C$ OR $C = 6$ $y = -2x + 6$ c) $\left(\frac{-2+0}{2}, \frac{0+(6)}{2} \right)$ $(-1, 3)$	N1 K1 K1 N1 K1 N1	6
7	$\frac{1}{3} \times \frac{22}{7} \times 7^2 \times h$	K1 K1	4

	$1232 = \frac{22}{7} \times 7^2 \times h - \frac{1}{3} \times \frac{22}{7} \times 7^2 \times h$ $1232 = \frac{308}{3} h$ $h = 12$	K1 N1	
8	a) $k = -2$ $m = 4$ b) $\begin{pmatrix} 4 & -3 \\ 6 & -5 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 17 \\ 27 \end{pmatrix}$ $x = 2,$ $y = 3$	P1 P1 K1 K1 N1 N1	6
9	(a) $2 \times \frac{22}{7} \times 7$ or $2 \times \frac{22}{7} \times 3.5$ $2 \times \frac{22}{7} \times 7 + 2 \times \frac{22}{7} \times 3.5 + 7 + 7$ 80 cm (b) $\frac{22}{7} \times 7^2$ or $\frac{22}{7} \times 3.5^2$ $\frac{22}{7} \times 7^2 - \frac{22}{7} \times 3.5^2$ 115.5 cm²	K1 K1 N1 K1 K1 N1	6
10	(a) $\{(N, G), (N, 4), (N, 9), (E, G), (E, 4), (E, 9), (T, G), (T, 4), (T, 9), (7, G), (7, 4), (7, 9)\}$ (b) (i) $\{(N, G), (E, G), (T, G)\}$ $\frac{1}{4}$ (ii) $\{(N, G), (N, 4), (N, 9), (E, G), (E, 4), (T, G), (T, 4), (T, 9), (7, G), (7, 4)\}$	P1 K1 N1	5

		$\frac{5}{6}$	K1 N1	
11	(a)	$\frac{4}{4}$ 1 ms^{-2} (b) 12×12 144 m (c) $[\frac{1}{2} \times (8+12) \times 4] + 144 + [\frac{1}{2} \times (12+20) \times (T-16)] = 328$ 25 m	K1 N1 K1 N1 K1 N1	6
12	(a)	$y = 24$, $y = 3$ (b) Skala betul dan seragam Plot graf dengan tepat (kesemua 9 tepat) Jika pelajar plot 7-8 tepat : K1 Graf licin yang melalui kesemua titik (c) (i) $y = 22.5 \pm 0.5$ (ii) $x = 2.7 \pm 0.1$, 0.7 ± 0.1 and -3.4 ± 0.1 (d) $y = 4x + 8$ Graf garis lurus $y = 4x + 8$ $x = -3.9 \pm 0.1$, 0.5 ± 0.1 , 3.4 ± 0.1 Kesemua 3 betul : K2 Hanya 2 betul : K1	N1N1 K1 K2 K1 K1 K1 K1 K2	12
13	a)	(a) (i) (4, 3) (ii) (2, 1) (b) (i) a) U = putaran 90° lawan arah jam pada pusat A(5, 2) <i>Rotation,</i> <i>90° anticlockwise</i> <i>about A(5, 2)</i>	K1 K2 K3	12

		b) V = pembesaran, dengan faktor skala 2, pada pusat (-1, 2) <i>enlargement,</i> <i>with the scale factor of 2,</i> <i>centre (-1, 2)</i> (ii) $ABCDEF + 120 = 2^2 \times 120$ $2^2 \times 120 : K1$ $ABCDEF = 360 \text{ cm}^2$	K3																						
			K2																						
			NI																						
14	a)	<table border="1"><thead><tr><th>Body mass(kg) <i>Berat Badan (kg)</i></th><th>Frequency <i>Kekerapan</i></th><th>Midpoint <i>Titik Tengah</i></th></tr></thead><tbody><tr><td>15 – 19</td><td>2</td><td>17</td></tr><tr><td>20 – 24</td><td>4</td><td>22</td></tr><tr><td>25 – 29</td><td>9</td><td>27</td></tr><tr><td>30 – 34</td><td>13</td><td>32</td></tr><tr><td>35 – 39</td><td>9</td><td>37</td></tr><tr><td>40 – 44</td><td>3</td><td>42</td></tr></tbody></table> Class interval : (III to VI) correct Frequency : (I to VI) correct Midpoint : (I to VI) correct (b) 30 – 34 (c) $\frac{2 \times 17 + 4 \times 22 + 9 \times 27 + 13 \times 32 + 9 \times 37 + 3 \times 42}{40}$ 31 (d) Histogram Axes are drawn in the correct direction , uniform scale for $14.5 \leq x \leq 44.5$ and $0 \leq y \leq 50$. Horizontal axis is labelled using midpoint or upper boundary 6 rectangular bars are drawn correctly (e) 12 students	Body mass(kg) <i>Berat Badan (kg)</i>	Frequency <i>Kekerapan</i>	Midpoint <i>Titik Tengah</i>	15 – 19	2	17	20 – 24	4	22	25 – 29	9	27	30 – 34	13	32	35 – 39	9	37	40 – 44	3	42	P1 P2 P1 P1 K2 N1 K1 K2 P1	12
Body mass(kg) <i>Berat Badan (kg)</i>	Frequency <i>Kekerapan</i>	Midpoint <i>Titik Tengah</i>																							
15 – 19	2	17																							
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25 – 29	9	27																							
30 – 34	13	32																							
35 – 39	9	37																							
40 – 44	3	42																							

15	15(a)		3	
	15(b)(i)		4	12
	(b)(ii)		5	
16	a) $180^\circ - 155^\circ = 25^\circ$ (35°N , 25°E) b) $(100^\circ + 25^\circ) \times 60 \times \cos 35^\circ$ 6143.64 c) 110×60 6600 d) i) 840×3.5		P1 P1P1 K1K1 N1 K1 N1 K1	12

	2940 n.m	N1	
	ii) $\frac{2940}{60} - 35^\circ$	K1	
	= 14°S	N1	

Graph for Question 14

Frequency

14

12

10

8

6

4

2

17

22

27

32

37

42

Mass (kg)