1449/1
Mathematics
Paper 1
September
2011
1¼ jam

YAYASAN PERAK

JABATAN PELAJARAN NEGERI PERAK

PEPERIKSAAN PERCUBAAN SIJIL PELAJARAN MALAYSIA NEGERI PERAK 2011

MATHEMATICS

PAPER 1

1 Hour 15 minutes

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

MAKLUMAT UNTUK CALON

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 2 hingga halaman 4.

Kertas soalan ini mengandungi 19 halaman bercetak dan 1 halaman tidak bercetak.

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The following formulae are helpful in answering the questions. The symbols given are 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 $A^{-1} = \dfrac{1}{ad-bc}\begin{bmatrix} d & -b \\ -c & a \end{bmatrix}$

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

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

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

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

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

Purata laju $= \dfrac{\textit{jarak yang dilalui}}{\textit{masa yang diambil}}$

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

Min $= \dfrac{\textit{hasil tambah nilai data}}{\textit{bilangan data}}$

11 Mean $= \dfrac{\text{sum of (class mark x frequency)}}{\text{sum of frequencies}}$

Min $= \dfrac{\textit{hasil tambah (nilai titik tengah kelas x kekerapan)}}{\textit{hasil tambah kekerapan}}$

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

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

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

$m = -\dfrac{\textit{pintasan-y}}{\textit{pintasan-x}}$

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SHAPES AND SPACE
BENTUK DAN RUANG

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

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

2. Circumference of circle $= \pi d = 2\pi r$
   Lilitan bulatan $= \pi d = 2\pi j$

3. Area of circle $= \pi r^2$
   Luas bulatan $= \pi j^2$

4. Curved surface area of cylinder $= 2\pi rh$
   Luas permukaan melengkung silinder $= 2\pi jt$

5. Surface area of sphere $= 4\pi r^2$
   Luas permukaan sfera $= 4\pi j^2$

6. Volume of right prism = cross sectional area x length
   Isipadu prisma tegak = luas keratan rentas x 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 $= \frac{1}{3}$ x base area x height

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

11. Sum of interior angles of a polygon $= (n - 2) \times 180^\circ$
    Hasil tambah sudut pedalaman poligon $= (n - 2) \times 180^\circ$

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12. $\frac{\text{arc length}}{\text{circumference of circle}} = \frac{\text{angle subtended at centre}}{360^0}$

$\frac{\textit{panjang lengkok}}{\textit{lilitan bulatan}} = \frac{\textit{sudut pusat}}{360^0}$

13. $\frac{\text{area of sector}}{\text{area of circle}} = \frac{\text{angle subtended at centre}}{360^0}$

$\frac{\textit{luas sektor}}{\textit{luas bulatan}} = \frac{\textit{sudut pusat}}{360^0}$

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

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

15. Area of image = k^2 x area of object
Luas imej = k^2 *x luas objek*

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1 Find the value of $30.02 \times 19.99 - 78.23$ and round off the answer correct to two significant figures.
Cari nilai $30.02 \times 19.99 - 78.23$ *dan bundarkan jawapan betul kepada dua angka bererti.*

A 520
B 521
C 522
D 523

2 Express 0.0000456 in standard form.
Ungkapkan 0.0000456 dalam bentuk piawai.

A 4.56×10^{-5}
B 4.56×10^{-4}
C 4.56×10^{4}
D 4.56×10^{5}

3 $5.4 \times 10^{8} + 2.9 \times 10^{9} =$

A 3.44×10^{8}
B 3.44×10^{9}
C 8.3×10^{8}
D 8.3×10^{9}

4 A rectangular wall has a width of 3 000 cm and a height of 1 800 cm. The wall will be covered with tiles. Each tile is a square of sides 30 cm. Calculate the number of tiles required to cover the wall fully.
Satu dinding berbentuk segiempat tepat mempunyai lebar 3 000 *cm dan tingginya* 1 800 *cm. Dinding ini akan ditutupi oleh jubin. Setiap jubin berbentuk segiempat sama dengan sisi* 30 *cm. Hitungkan bilangan jubin yang diperlukan untuk menutupi dinding itu dengan sepenuhnya.*

A 5.4×10^{5}
B 5.4×10^{3}
C 6.0×10^{5}
D 6.0×10^{3}

5 State the value of the digit 6 in the number 2634_8, in base ten.
Nyatakan nilai digit 6 *dalam number* 2634_8, *dalam asas sepuluh.*

A 48
B 64
C 384
D 600

6 $100011_2 - 1110_2 =$

A 10001_2
B 11000_2
C 10111_2
D 10101_2

7 Given that $10001_2 < X_{10} < 23_8$ and X is an integer in base 10, find the value of X.
Diberi bahawa $10001_2 < X_{10} < 23_8$ X *ialah integer dalam asas* 10, *carikan nilai* X.

A 18
B 20
C 22
D 24

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8 Given that $\frac{1-4p}{2} = 3\ (p - 2)$, calculate the value of p.

Diberi $\frac{1-4p}{2} = 3(p - 2)$, *hitung nilai p.*

A $\frac{3}{10}$

B $\frac{7}{8}$

C $\frac{6}{5}$

D $\frac{13}{10}$

9 $(p - 2)(q + 3) - (p - 1)(q - 3) =$

A $6p - q - 9$
B $6p + q - 9$
C $6p - 3q - 9$
D $2pq - 3q - 3$

10 In Diagram 1, ABCDE is a pentagon.
Dalam Rajah 1, ABCDE ialah sebuah pentagon.

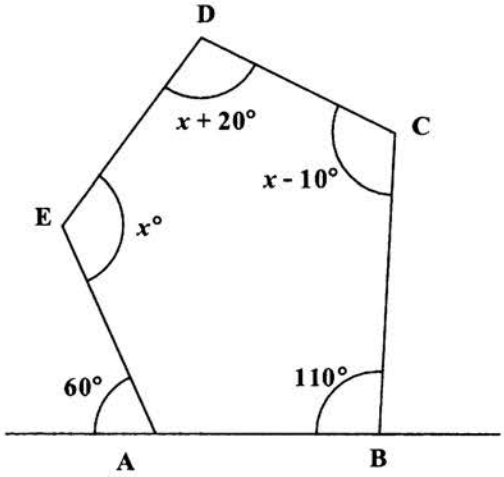

Diagram 1
Rajah 1

Find the value of x.
Carikan nilai x.

A 80°
B 100°
C 105°
D 110°

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11. Express $\frac{n}{5}-\frac{5-2n^2}{15n}$ as a single fraction in its simplest form.

Ungkapkan $\frac{n}{5}-\frac{5-2n^2}{15n}$ *sebagai satu pecahan tunggal dalam bentuk termudah.*

A $\frac{n^2-5}{15n}$

B $\frac{n^2+5}{15n}$

C $\frac{n^2-1}{3n}$

D $\frac{n^2+1}{3n}$

12. In Diagram 2, RST is a common tangent to the circles CSD and ABSE at point S respectively.
Dalam Rajah 2, RST ialah tangen sepunya kepada bulatan CSD dan ABSE pada titik S.

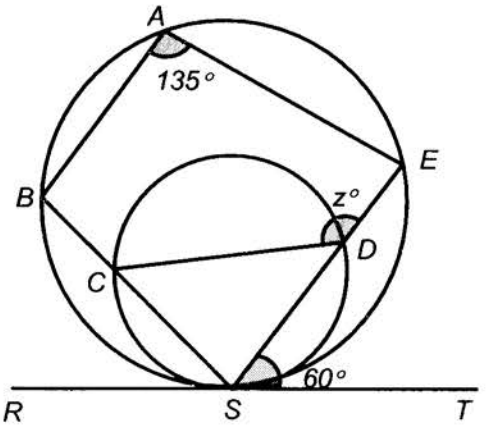

Diagram 2
Rajah 2

Given that EDS is a straight line. Find the value of z.
Diberi bahawa EDS ialah satu garis lurus. Cari nilai z.

A 100
B 105
C 150
D 165

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13 Diagram 3 shows three polygons, Q, R and S, drawn on a Cartesian plane.
Rajah 3 menunjukkan tiga poligon, Q, R dan S, dilukis di atas satah Cartesan.

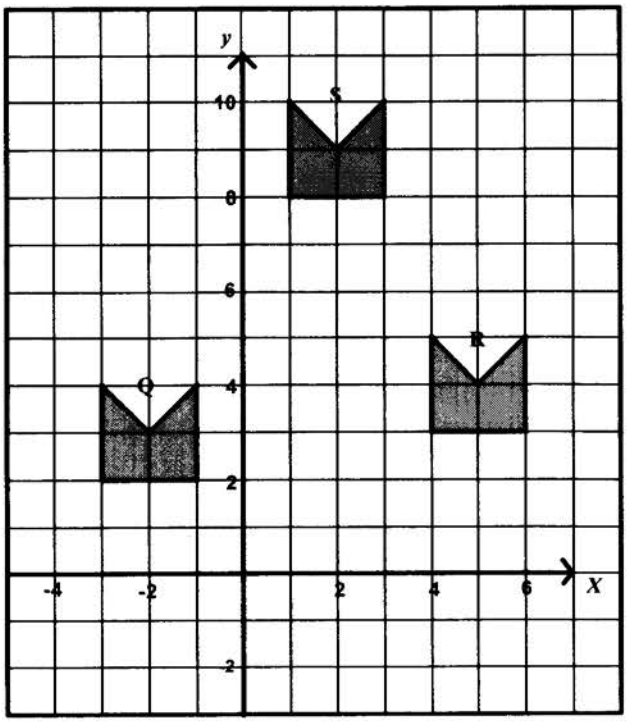

Diagram 3
Rajah 3

Which of the following is the **incorrect** translation?
*Antara yang berikut, yang manakah translasi yang **salah**?*

	Object / *Objek*	Image / *Imej*	Translation / *Translasi*
A	Q	R	$\begin{pmatrix} 7 \\ 1 \end{pmatrix}$
B	S	Q	$\begin{pmatrix} -4 \\ -6 \end{pmatrix}$
C	R	S	$\begin{pmatrix} -3 \\ 5 \end{pmatrix}$
D	Q	S	$\begin{pmatrix} 6 \\ 4 \end{pmatrix}$

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14. Diagram 4 shows two polygons, *R* and *S*, drawn on a Cartesian plane. Polygon *S* is the image of polygon *R* under an enlargement.
Rajah 4 menunjukkan dua poligon, R dan S, dilukis di atas satah Cartesan. Poligon S adalah imej bagi poligon R di bawah suatu pembesaran.

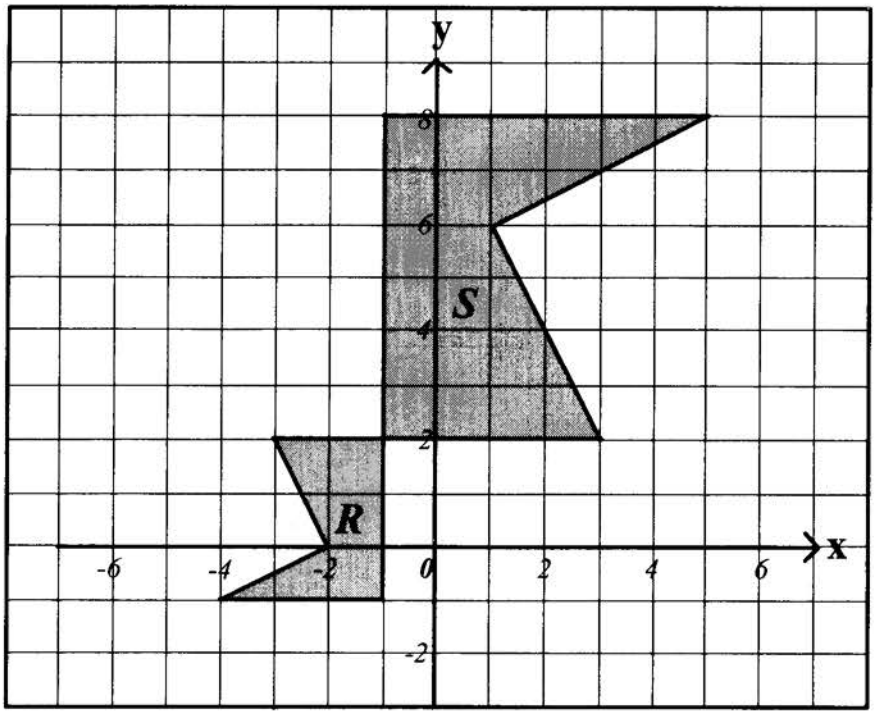

Diagram 4
Rajah 4

Find the centre and the scale factor of the enlargement.
Cari pusat pembesaran dan faktor skala pembesaran itu

	Centre of enlargement *Pusat pembesaran*	Scale factor *Faktor skala*
A	(–1, 2)	2
B	(–1, 2)	–2
C	(2, –1)	$-\frac{1}{2}$
D	(2, –1)	$\frac{1}{2}$

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15. In Diagram 5, ACE and BCD are two right angled triangles. ED = 11 cm , AE = 9 cm and AB = 7 cm.
Dalam Rajah 5, ACE dan BCD ialah dua buah segi tiga bersudut tegak. ED = 11 *cm, AE = 9 cm dan AB = 7 cm.*

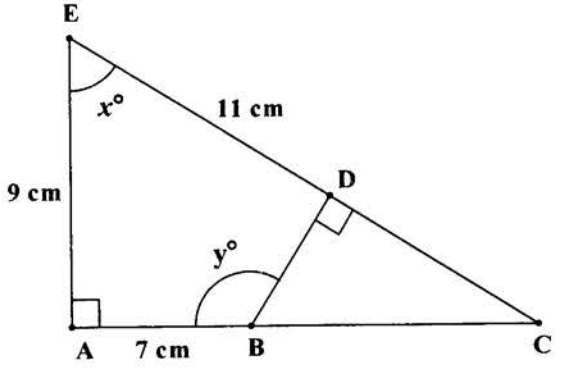

Diagram 5
Rajah 5

Given that $\tan x° = \frac{4}{3}$, find the value of $\cos y°$.

Diberi bahawa $\tan x° = \frac{4}{3}$, *cari nilai kos* $y°$

A $\frac{4}{3}$

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

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

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

16. Solve the inequality $5x + 3 > 1 - \frac{3x}{4}$

Selesaikan ketaksamaan $5x + 3 > 1 - \frac{3x}{4}$

A $x > -\frac{8}{17}$

B $x > -\frac{8}{23}$

C $x > -\frac{23}{8}$

D $x > \frac{1}{8}$

17. List all the integer values of w that satisfy both the simultaneous linear inequalities $\frac{w}{5} > -1$ and $2 + w \leq 3$.

Senaraikan semua nilai integer w yang memuaskan kedua-dua ketaksamaan linear serentak $\frac{w}{5} > -1$ *dan* $2 + w \leq 3$.

A $-4, -3, -2, -1, 0$

B $-4, -3, -2, -1, 0, 1$

C $-5, -4, -3, -2, -1, 0$

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

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18. Diagram 6 shows the graphs of $y = \sin x$ and $y = \cos x$ for $0° \leq x \leq$ B.
Rajah 6 menunjukkan graf bagi $y = \sin x$ dan $y = \text{kos } x$ untuk $0° \leq x \leq$ B.

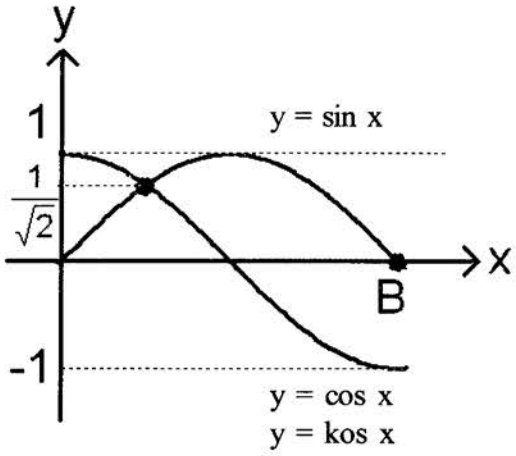

Diagram 6
Rajah 6

State the x-coordinate of point B.
Nyatakan koordinat-x bagi titik B.

A 90°
B 135°
C 180°
D 270°

19. Diagram 7 shows a cuboid with a flat horizontal base ABCD.
Rajah 7 menunjukkan sebuah kuboid dengan tapak mengufuk ABCD.

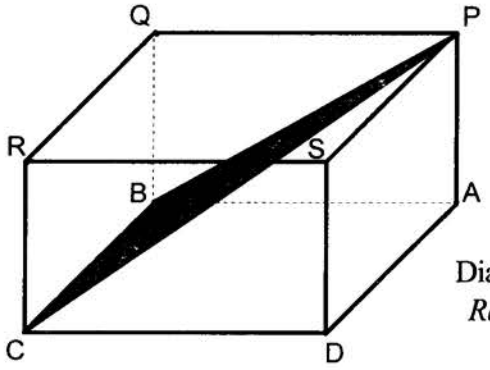

Diagram 7
Rajah 7

Name the angle between the plane CBP and the base CBQR.
Namakan sudut di antara satah CBP dengan satah CBQR .

A ∠RCP
B ∠PBC
C ∠QPB
D ∠QBP

20. Given that $p = \dfrac{6+5q}{q-3}$ express q in term of p.

Diberi $p = \dfrac{6+5q}{q-3}$, ungkapkan q dalam sebutan p.

A $\dfrac{p+5}{3(2-p)}$
B $\dfrac{p-5}{3(2+p)}$
C $\dfrac{3(2-p)}{p+5}$
D $\dfrac{3(2+p)}{p-5}$

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21. Diagram 8 shows two vertical poles, STM and RN on a horizontal plane.
Rajah 8 menunjukkan dua batang tiang tegak, STM dan RN pada satah mengufuk.

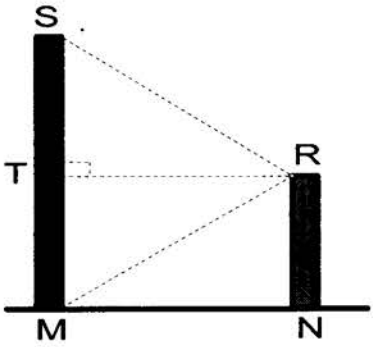

Diagram 8
Rajah 8

Find the angle of elevation of point S from point R and the angle of depression of point M from point R.
Cari sudut dongakan titik S dari titik R dan sudut tunduk titik M dari titik R.

	Angle of elevation *Sudut dongakan*	Angle of depression *Sudut tunduk*
A	$\angle RST$	$\angle RMT$
B	$\angle RTS$	$\angle MTR$
C	$\angle TRS$	$\angle TRM$
D	$\angle SRT$	$\angle RNM$

22. Diagram 9 shows two vertical poles on the horizontal plane.
Rajah 9 menunjukkan dua batang tiang tegak di atas satah mengufuk.

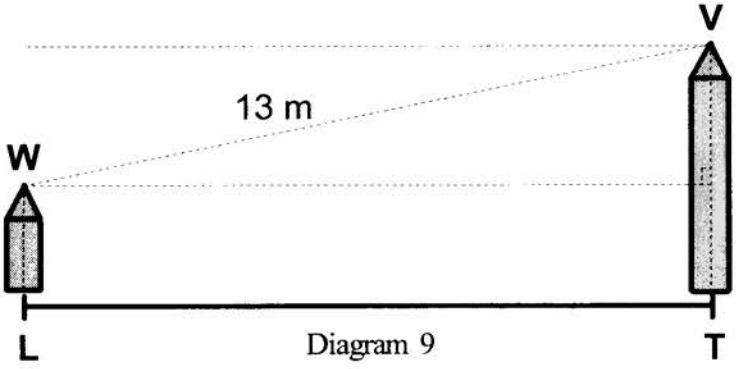

Diagram 9
Rajah 9

It is given that the angle of depression of point W from point V is 46.17° and the distance between the two points is 13 m. LT is the distance between the two vertical poles.
Diberi bahawa sudut tunduk titik W dari titik V ialah 46.17° dan jarak antara dua titik itu ialah 13 m. LT ialah jarak antara kedua-dua batang tiang tegak itu.

Find the distance of LT.
Cari jarak LT.

A 3 m
B 5 m
C 7 m
D 9 m

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23. In Diagram 10, P, Q and R are three points on a horizontal plane.
Rajah 10 menunjukkan tiga titik P, Q dan R di atas satu satah mengufuk.

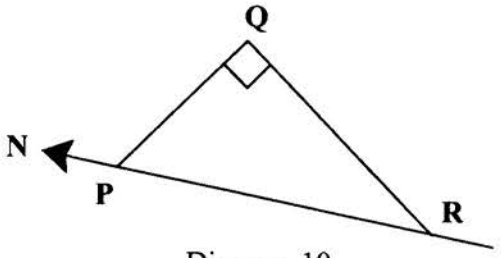

Diagram 10
Rajah 10

Given that the bearing of point Q from point P is 130°, find the bearing of point R from point Q.
Diberi bearing titik Q dari titik P ialah 130°, cari bearing titik R dari titik Q.

A 310°
B 220°
C 180°
D 090°

24. $\sqrt[4]{m^{\frac{2}{3}}} =$

A m^{6}

B $m^{\frac{1}{6}}$

C $m^{\frac{8}{3}}$

D $m^{\frac{3}{8}}$

25. Evaluate $81^{\frac{3}{4}} \div 27^{-\frac{4}{3}} \times 3^{-2}$.

Nilaikan $81^{\frac{3}{4}} \div 27^{-\frac{4}{3}} \times 3^{-2}$.

A 3^{2}
B 3^{7}
C 3^{5}
D 3^{-3}

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26. In Diagram 11, NOS is the axis of the earth.
Dalam Rajah 11, NOS adalah paksi bumi.

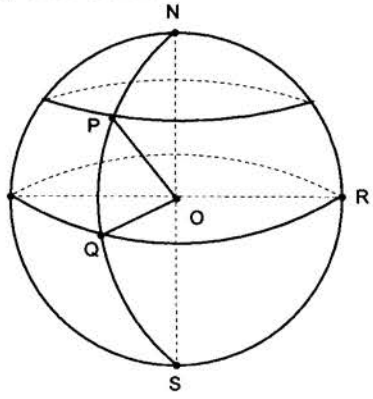

Diagram 11
Rajah 11

Given that ∠PON = 25°, ∠QOR = 100° and R(0°, 70°E), find the position of P.
Diberi ∠PON = 25°, ∠QOR = 100° dan R(0°, 70°T), cari kedudukan P.

A (25°N, 30°W) *(25°U, 30°B)*

B (25°N, 130°E) *(25°U, 130°T)*

C (65°N, 30°W) *(65°U, 30°B)*

D (65°N, 130°E) *(65°U, 130°T)*

27. Diagram 12 is a bar chart showing the number of candidates and their respective grades in a Mathematics test.
Rajah 12 ialah carta palang yang menunjukkan bilangan calon dan gred yang diperolehi masing-masing dalam ujian Matematik.

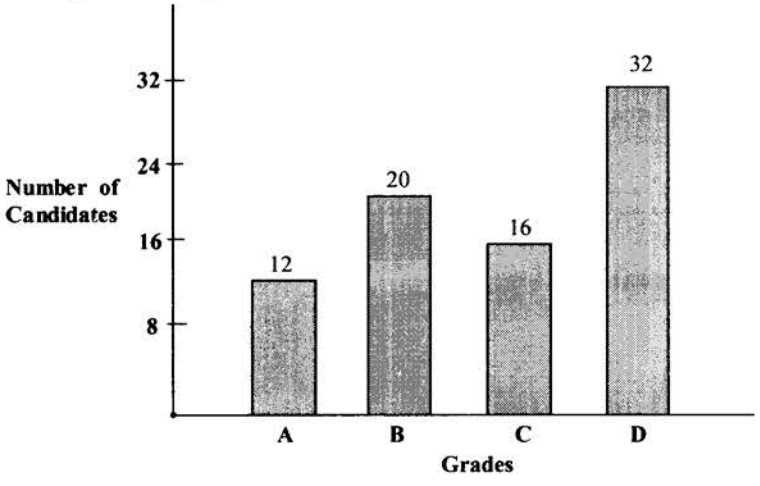

Diagram 12
Rajah 12

If a pie chart is drawn to represent the given information, calculate the difference of angle of sector which represented by the candidates with grade A and grade B.
Jika carta pai dilukis untuk mewakili maklumat yang diberi, hitungkan perbezaan sudut bagi sektor yang mewakili calon bagi gred A dan gred B.

A 36

B 45

C 54

D 72

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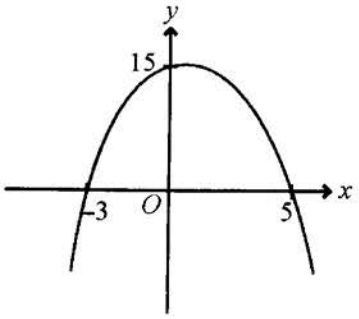
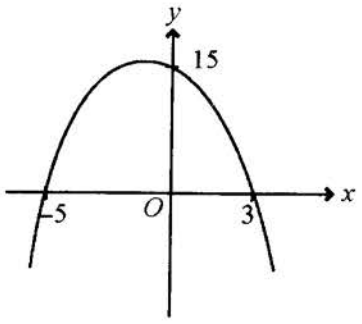
28. Which of the following graphs represents $y = -x^2 + 2x + 15$?
Antara graf yang berikut, manakah mewakili $y = -x^2 + 2x + 15$?

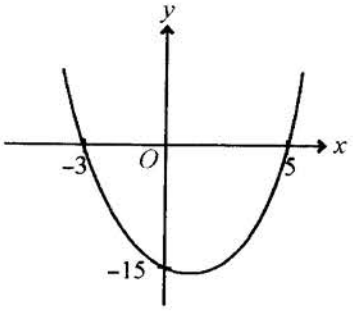
A



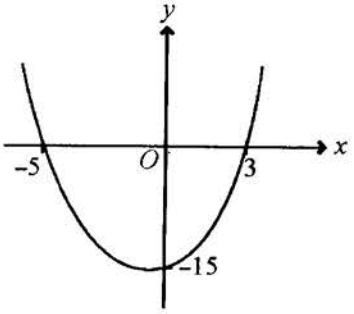
C



B



D



29. The pictograph in diagram 13 shows the sale of magazines in a week. The number of sports magazines sold is not shown.
Piktograf dalam rajah 13 di bawah menunjukkan jualan majalah pada satu minggu tertentu. Bilangan majalah sukan yang telah dijual tidak ditunjukkan.

Fashion *Fesyen*	📖 📖 📖 📖 📖 📖 📖 📖
Entertainment *Hiburan*	📖 📖 📖 📖 📖
Sports *Sukan*	

📖 represents 12 copies of magazine
mewakili 12 naskah majalah

Diagram 13
Rajah 13

The sale of entertainment magazines is 25% of the total sales in that week. Calculate the number of sports magazines sold.
Jualan majalah hiburan adalah 25% daripada jumlah jualan minggu itu. Hitungkan bilangan majalah sukan yang telah dijual.

A 7
B 39
C 84
D 94

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30. It is given that P varies directly as the square root of Q and P = 3 when Q = 16.
Diberi bahawa P berubah secara langsung dengan punca kuasa dua Q dan P = 3 apabila Q =16.

Calculate the value of P when Q = 64.
Kirakan nilai P apabila Q = 64

A $\frac{3}{2}$ C 12

B 6 D 48

31. Table 1 shows the relation between the variables *M*, *N* and *R*.
Jadual 1 menunjukkan hubungan antara pembolehubah M, N dan R.

M	2	8
N	3	5
R	9	***h***

Table 1
Jadual 1

If *M* varies directly as *N* and inversely as the square root of *R*, calculate the value of ***h***.
Jika M berubah secara langsung dengan N dan berubah secara songsang dengan punca kuasa dua R, kirakan nilai ***h***.

A $\frac{16}{25}$ C $\frac{15}{4}$

B $\frac{5}{4}$ D $\frac{25}{16}$

32. $2(3 \quad 1 \quad 5)+(-4 \quad 2 \quad -1) =$

A (-1 3 4)
B (-1 4 7)
C (2 3 4)
D (2 4 9)

33. $2\begin{pmatrix} m \\ n \end{pmatrix}+3\begin{pmatrix} 4n \\ 2 \end{pmatrix}=\begin{pmatrix} 6 \\ 4 \end{pmatrix}$

Find the value of *m* and *n*.
Kira nilai m dan n.

A m = 33, n = 5
B m = -27, n = -5
C m = 9, n = -1
D m = -3, n = -1

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34. Table 2 shows the weight in kg of a group of students.
Jadual 2 menunjukkan berat dalam kg bagi sekumpulan murid.

Weight (kg) *Berat (kg)*	20 - 29	30 - 39	40 - 49	50 - 59
Number of students *Bilangan murid*	10	18	15	7

Table 2
Jadual 2

Calculate the mean weight, in kg, of the students.
Kirakan min bagi berat murid, dalam kg.

A 38.3
B 38.5
C 39.3
D 39.5

35. Diagram 14 is a Venn diagram showing the elements of set *X*, *Y* and *Z*.
Rajah 14 ialah gambar rajah Venn menunjukkan unsur-unsur dalam set X, Y dan Z.

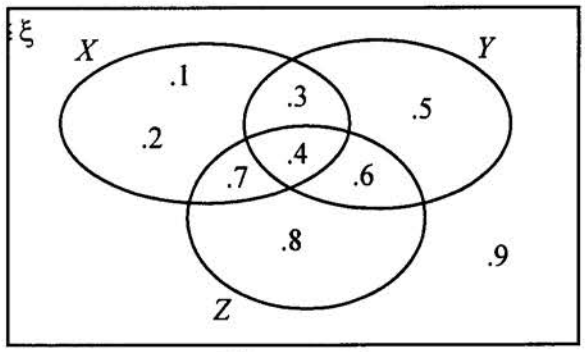

Diagram 14
Rajah 14

$(X \cap Y) \cup Z'$ is
$(X \cap Y) \cup Z'$ *ialah*

A $\{1, 2, 3, 5\}$
B $\{1, 2, 3, 5, 9\}$
C $\{1, 2, 3, 4, 5, 9\}$
D $\{1, 2, 3, 4, 5, 6, 7, 9\}$

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36. Diagram 15 shows a Venn diagram with universal set $\xi = P \cup Q \cup R$.
Rajah 15 menunjukkan gambar rajah Venn dengan set semesta $\xi = P \cup Q \cup R$.

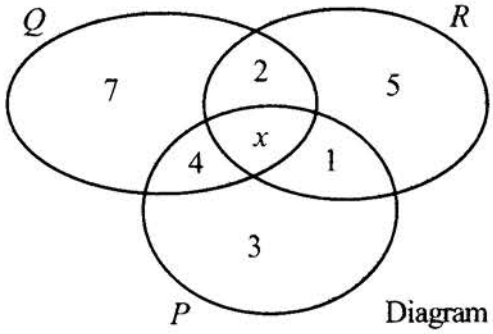

Diagram 15
Rajah 15

Given that n(Q) = n($P \cap R$)' , find the value of x.
Diberi n(Q) = n(P ∩ R)' , cari nilai bagi x.

A 1
B 3
C 6
D 8

37. Find the gradient of the line $3x - 4y = 8$.
Cari kecerunan bagi garis lurus $3x - 4y = 8$.

A -2
B $-\frac{3}{4}$
C $\frac{3}{4}$
D $\frac{4}{3}$

38. In Diagram 16, the gradient of the line JK is -5 and HJ = 25 units.
Dalam Rajah 16, kecerunan garis lurus JK ialah -5 dan HJ = 25 unit.

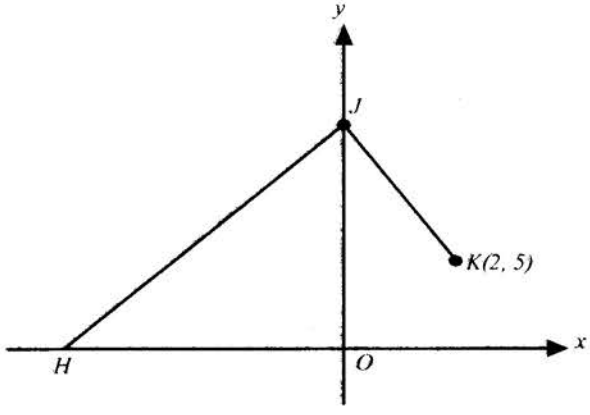

Diagram 16
Rajah 16

Find the x-intercept of line HJ.
Cari nilai pintasan- x bagi garis lurus HJ

A – 20
B – 3
C 3
D 20

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39. Diagram 17 shows a collection of letter cards.
Rajah 17 menunjukkan koleksi huruf pada kad-kad .

S	A	V	E	T	H	E	E	A	R	T	H

Diagram 17
Rajah 17

A card is chosen at random from this collection. State the probability that the card chosen is a card with letter E.
Sekeping kad dipilih secara rawak daripada koleksi ini. Nyatakan kebarangkalian bahawa sekeping kad yang dipilih ialah kad huruf E.

A $\frac{1}{3}$

B $\frac{1}{4}$

C $\frac{1}{6}$

D $\frac{1}{12}$

40. Table 3 below shows the weight distribution of a group of students in SMK Maju Jaya.
Jadual 3 menunjukkan taburan berat sekumpulan murid di SMK Maju Jaya.

Weight (kg) *Berat (kg)*	41 - 45	46 - 50	51 - 55	56 - 60	61 - 65	66 - 70
Number of Students *Bilangan murid*	45	40	65	70	63	47

Table 3
Jadual 3

If a students is picked at random, find the probability that his weight is less than 56 kg.
Jika seorang murid dipilih secara rawak, berapakah kebarangkalian murid yang beratnya kurang daripada 56 kg.

A $\frac{5}{11}$

B $\frac{6}{11}$

C $\frac{7}{22}$

D $\frac{2}{3}$

END OF QUESTION PAPER
KERTAS SOALAN TAMAT

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NAMA:..... NO. ANGKA GILIRAN:.....

1449/2
Mathematics
Paper 2
September
2011
2½ jam

YAYASAN PERAK

JABATAN PELAJARAN NEGERI PERAK

PEPERIKSAAN PERCUBAAN SIJIL PELAJARAN MALAYSIA NEGERI PERAK 2011

MATHEMATICS

PAPER 2

Two hours 30 minutes

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 dibenarkan menjawab keseluruhan atau sebahagian soalan sama ada dalam bahasa Inggeris atau bahasa Melayu.
4. Calon dikehendaki membaca maklumat di halaman belakang kertas soalan ini.

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

Kertas soalan ini mengandungi 30 halaman bercetak dan 2 halaman tidak bercetak.

http://edu.joshuatly.com/ Note : This document might take a little longer time to print.

The following formulae are helpful in answering the questions. The symbols given are 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 $A^{-1} = \dfrac{1}{ad-bc}\begin{bmatrix} d & -b \\ -c & a \end{bmatrix}$

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

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

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

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

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

Purata laju $= \dfrac{\textit{jarak yang dilalui}}{\textit{masa yang diambil}}$

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

Min $= \dfrac{\textit{hasil tambah nilai data}}{\textit{bilangan data}}$

11 Mean $= \dfrac{\text{sum of (class mark x frequency)}}{\text{sum of frequencies}}$

Min $= \dfrac{\textit{hasil tambah (nilai titik tengah kelas x kekerapan)}}{\textit{hasil tambah kekerapan}}$

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

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

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

$m = -\dfrac{\textit{pintasan-y}}{\textit{pintasan-x}}$

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SHAPES AND SPACE
BENTUK DAN RUANG

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

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

2. Circumference of circle $= \pi d = 2\pi r$
   Lilitan bulatan $= \pi d = 2\pi j$

3. Area of circle $= \pi r^2$
   Luas bulatan $= \pi j^2$

4. Curved surface area of cylinder $= 2\pi rh$
   Luas permukaan melengkung silinder $= 2\pi jt$

5. Surface area of sphere $= 4\pi r^2$
   Luas permukaan sfera $= 4\pi j^2$

6. Volume of right prism = cross sectional area x length
   Isipadu prisma tegak = luas keratan rentas x 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 $= \frac{1}{3}$ x base area x height

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

11. Sum of interior angles of a polygon $= (n - 2) \times 180^\circ$
    Hasil tambah sudut pedalaman poligon $= (n - 2) \times 180^\circ$

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12. $\frac{\text{arc length}}{\text{circumference of circle}} = \frac{\text{angle subtended at centre}}{360^0}$

$\frac{\textit{panjang lengkok}}{\textit{lilitan bulatan}} = \frac{\textit{sudut pusat}}{360^0}$

13. $\frac{\text{area of sector}}{\text{area of circle}} = \frac{\text{angle subtended at centre}}{360^0}$

$\frac{\textit{luas sektor}}{\textit{luas bulatan}} = \frac{\textit{sudut pusat}}{360^0}$

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

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

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

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

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Section A
Bahagian A

[52 marks]
[52 *markah*]

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

1 On the graph provided, shade the region which satisfies the three inequalities x

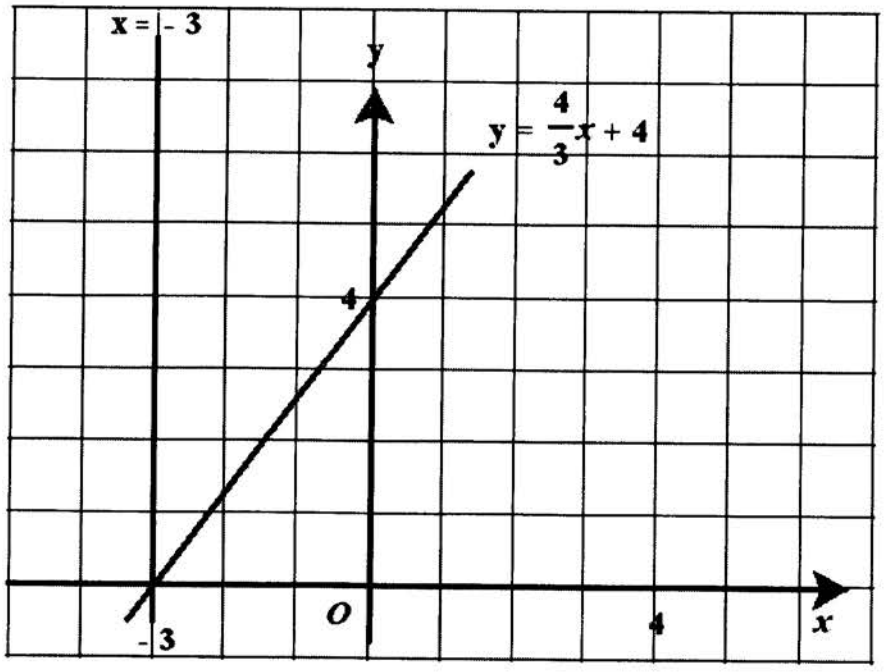
$x \geq -3,\ y \geq \frac{4}{3}x + 4$ *dan* $x + y < 4$.

Pada graf yang disediakan, lorekkan rantau yang memuaskan ketiga-tiga ketaksamaan

$x \geq -3,\ y \geq \frac{4}{3}x + 4$ *dan* $x + y < 4$.

[3 *marks*]
[3 *markah*]

Answer / *Jawapan*:



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2 Using factorisation, solve the following quadratic equation:
Menggunakan pemfaktoran, selesaikan persamaan kuadratik berikut:

$$\frac{2m^2 + 3m}{2} = m + 3$$

[4 *marks*]
[4 *markah*]

Answer / *Jawapan*:

3 Calculate the value of p and of q that satisfy the following simultaneous linear equations:
Hitung nilai p *dan* q *yang memuaskan persamaan linear serentak berikut.*

$$2p - \frac{2}{3}q = 6$$

$$p - 2q = 8$$

[4 *marks*]
[4 *markah*]

Answer / *Jawapan*:

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4 Diagram 4 shows a cuboid with horizontal base *TUVW*.
Rajah 4 menunjukkan sebuah kuboid dengan tapak mengufuk TUVW.

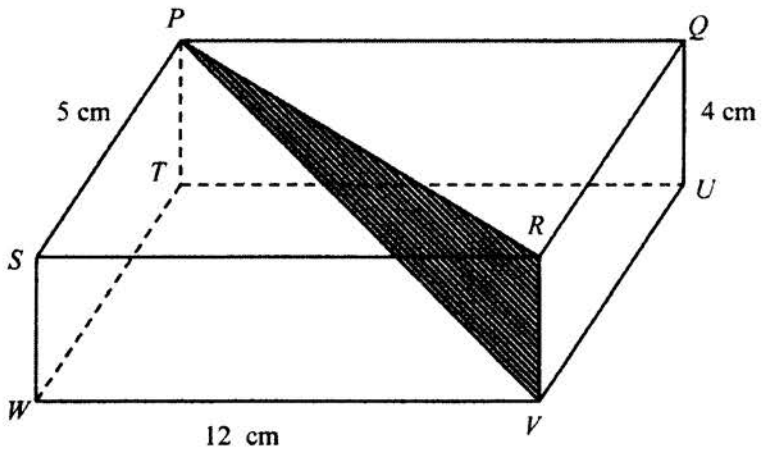

Diagram 4
Rajah 4

(a) Name the angle between the plane *PRV* and the plane *QRVU*.
Namakan sudut di antara satah PRV dengan satah QRVU.

(b) Calculate the angle between the plane *PRV* and the plane *QRVU*.
Hitung sudut di antara satah PRV dengan satah QRVU.

[3 *marks*]
[3 *markah*]

Answer / *Jawapan* :

(a)

(b)

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5 (a) State whether the following statement is true or false.
Nyatakan sama ada pernyataan berikut adalah benar atau palsu.

(i) $2^2 + 3^2 > 4^2$ and $-24 < -0.5$

$2^2 + 3^2 > 4^2$ *dan* $-24 < -0.5$

(ii) Some even numbers are multiple of 7.
Sebilangan nombor genap adalah gandaan 7.

(b) Write down the converse of the following implication.
Hence, state whether the converse is true or false.
Tulis akas untuk implikasi berikut.
Seterusnya, nyatakan sama ada akas tersebut adalah benar atau palsu.

If $n > 12$, then $n > 7$
Jika $n > 12$, *maka* $n > 7$

(c) Write down Premise 2 to complete the following argument.
Tulis Premis 2 untuk melengkapkan hujah berikut.

Premise 1 : All squares have four sides of equal length.
Premis 1 : *Semua segi empat sama mempunyai empat sisi yang sama panjang.*

Premise 2/*Premis* 2: .....

Conclusion : *PQRS* has four sides of equal length.
Kesimpulan : *PQRS mempunyai empat sisi yang sama panjang.*

[5 *marks*]
[5 *markah*]

Answer / *Jawapan* :

(a) (i) .....

(ii) .....

(b) .....

.....

(c) Premise /*Premis* 2: .....

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6 In Diagram 6, the straight line *PR* is parallel to straight line *AD*. *O* is the origin.
Dalam Rajah 6, garis lurus PR adalah selari dengan garis lurus AD. O ialah asalan.

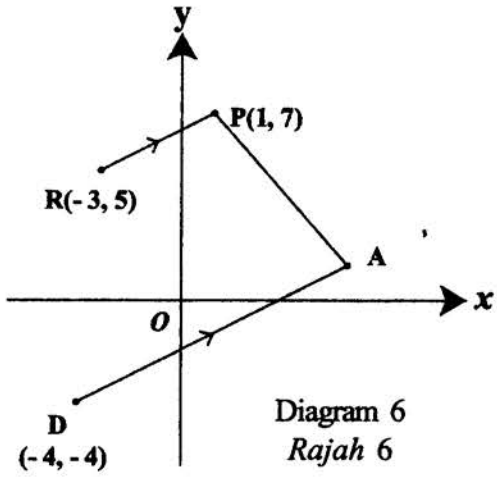

Diagram 6
Rajah 6

Find
Cari

(a) the gradient of the straight line *PR*
kecerunan garis lurus PR

(b) the equation of the straight line *AD*,
persamaan garis lurus AD,

(c) the *x*-intercept of the straight line *AD*.
pintasan-x bagi garis lurus AD.

[6 m*arks*]
[6*markah*]

Answer / *Jawapan* :

(a)

(b)

(c)

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7 The inverse matrix of $\begin{pmatrix} 2 & -1 \\ 3 & -4 \end{pmatrix}$ is $-\frac{1}{d}\begin{pmatrix} e & 1 \\ -3 & 2 \end{pmatrix}$.

Matriks songsang bagi $\begin{pmatrix} 2 & -1 \\ 3 & -4 \end{pmatrix}$ *ialah* $-\frac{1}{d}\begin{pmatrix} e & 1 \\ -3 & 2 \end{pmatrix}$.

(a) Find the value of d and of e.
Cari nilai d dan nilai e.

((b) Using matrices, calculate the value of x and of y that satisfy both of the following equations:
Dengan menggunakan kaedah matriks, hitungkan nilai x dan y yang memuaskan kedua dua persamaan berikut:

$$2x - y = 11$$
$$3x - 4y = 9$$

[6 marks]
[6 *markah*]

Answer / *Jawapan*:

(a)

(b)

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8 Diagram 8 shows a solid cylinder of length 15 cm and diameter 14 cm. A cone with height 6 cm is taken out of the solid.
Rajah 8 menunjukkan sebuah pepejal berbentuk silinder mempunyai panjang 15 cm dan berdiameter 14 cm. Sebuah pepejal berbentuk kon dengan ketinggian 6 cm dikeluarkan daripada silinder itu.

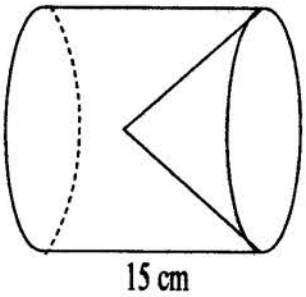

Diagram 8
Rajah 8

Calculate the volume, in cm^3, of the remaining solid.
Hitungkan isipadu, dalam cm^3, bagi pepejal yang tinggal itu.

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

[4 *marks*]
[4 *markah*]

Answer / *Jawapan* :

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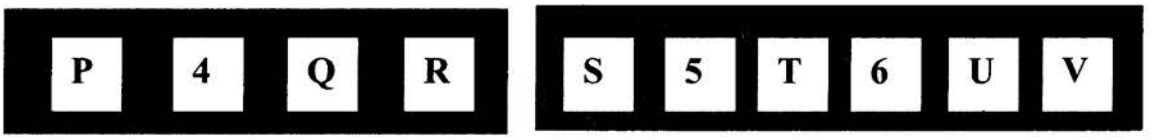
9 Diagram 9 shows ten labelled cards in two boxes.
Rajah 9 menunjukkan sepuluh kad yang berlabel di dalam dua buah kotak.



Box A
Kotak A

Box B
Kotak B

Diagram 9
Rajah 9

A card is picked at random from each of the boxes.
Sekeping kad dipilih secara rawak daripada setiap kotak itu.

By listing the outcomes, find the probability that
Dengan menyenaraikan kesudahan, cari kebarangkalian bahawa

(a) Both cards are labelled with a number,
Kedua-dua kad dilabel dengan nombor,

(b) One card is labelled with a number and the other card is labelled with a letter.
Sekeping kad dilabel dengan nombor dan kad yang satu lagi dilabel dengan huruf.

[5 *marks*]
[*5 markah*]

Answer / *Jawapan*:

(a)

(b)

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10 In Diagram 10, *OPQ* and *ORST* are sectors of two different circles which have the same centre *O*.
Dalam Rajah 10, OPQ dan ORST ialah sektor bagi dua bulatan yang berlainan tetapi mempunyai pusat yang sama O.

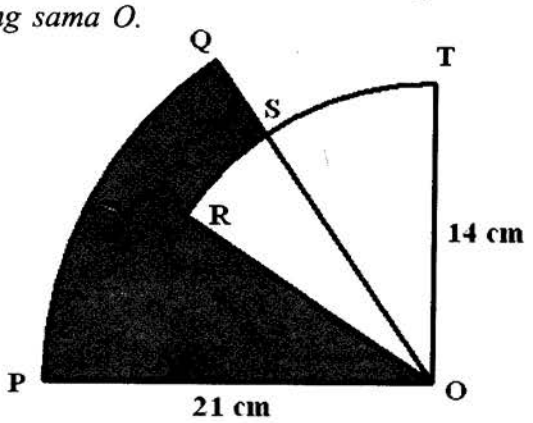

Diagram 10
Rajah 10

Given $\angle POQ = 60°$, $\angle ROT = 45°$ and $\angle POT = 90°$.
Diberi $\angle POQ = 60°$, $\angle ROT = 45°$ *dan* $\angle POT = 90°$.

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

Calculate
Hitung

(a) the perimeter, in cm, of the whole diagram.
perimeter, dalam cm, seluruh rajah itu

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

[6 *marks*]
[6 *markah*]

Answer / *Jawapan*:

(a)

(b)

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11. Diagram 11 shows the speed-time graph for the movement of a particle for a period of $\frac{4}{3}x$ seconds.

Rajah 11 *menunjukkan graf laju-masa bagi pergerakan suatu zarah dalam tempoh* $\frac{4}{3}x$ *saat*

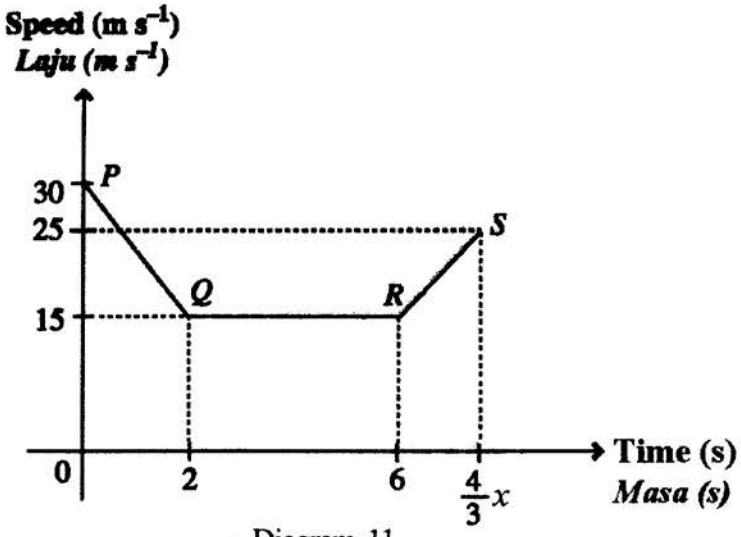

Diagram 11
Rajah 11

(a) State the length of time, in s, during the particle moves at uniform speed.
Nyatakan tempoh masa, dalam s, zarah itu bergerak dengan laju seragam.

(b) Calculate the rate of change of speed, in m s^{-2}, of the particle in the first 2 seconds.
Hitung kadar perubahan laju, dalam m s^{-2}*, zarah itu dalam 2 saat pertama.*

(c) The total distance travelled in $\frac{4}{3}x$ seconds is 145 metres. Calculate the value of x.

Jumlah jarak yang telah dilalui dalam $\frac{4}{3}x$ *saat ialah 145 meter. Hitung nilai x.*

[6 *marks*]
[6 *markah*]

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Answer / *Jawapan*:

(a)

(b)

(c)

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

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

12 (a) Complete Table 12 in the answer space on page 17 for the equation $y = -\frac{24}{x}$ by writing down the values of y when $x = 3$ and $x = -1.5$.

Lengkapkan Jadual 12 di ruang jawapan pada halaman 17 bagi persamaan $y = -\frac{24}{x}$ *dengan menulis nilai-nilai y apabila x = 3 dan x = – 1.5.*

[2 *marks*]
[2 *markah*]

(b) *For this part of the questions, use the graph paper provided on page 18.*
You may use a flexible curve ruler.
Untuk ceraian soalan ini, gunakan kertas graf yang disediakan pada halaman 18.
Anda boleh menggunakan pembaris fleksibel.
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 for $y = -\frac{24}{x}$ for $-4 \le x \le 4$.

Dengan menggunakan skala 2 cm *kepada* 1 unit *pada paksi-x dan* 2 cm *kepada* 5 unit *pada paksi-y, lukiskan graf* bagi $y = -\frac{24}{x}$ bagi $-4 \le x \le 4$.

[5 *marks*]
[5 *markah*]

(c) From your graph, find
Daripada graf anda, carikan

(i) the value of y when $x = -2.8$,
nilai y apabila x = – 2.8,

(ii) the value of x when $y = 12$.
nilai x apabila y = 12.

[2 *marks*]
[2 *markah*]

(d) Draw a suitable straight line on the graph in 12(b) to find the value of x which satisfies the equation $5x - 2x^2 = -24$ for $-4 \le x \le 4$.
State the value of x.

Lukiskan satu garis lurus yang sesuai pada graf di 12(b) *untuk mencari satu nilai x yang memuaskan persamaan* $5x - 2x^2 = -24$ *bagi* $-4 \le x \le 4$.
Nyatakan nilai x itu.

[3 *marks*]
[3 *markah*]

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Answer :

(a) $y = -\frac{24}{x}$

x	-4	-3	-2	-1.5	-1	1	2	3	4
y	6	8	12		24	-24	-12		-6

Table 12
Jadual 12

(b) Refer graph on page 18.
Rujuk graf di halaman 18.

(c) (i) y = ...

(ii) x = ...

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

.....

x = ...

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Graph for Question 12 / *Graf untuk Soalan 12*

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13 Diagram 13.1 shows point J and straight line $y = x$ drawn on a Cartesian plane.
Rajah 13.1 menunjukkan titik J *dan garislurus* $y = x$ *dilukis pada suatu satah Cartesan.*

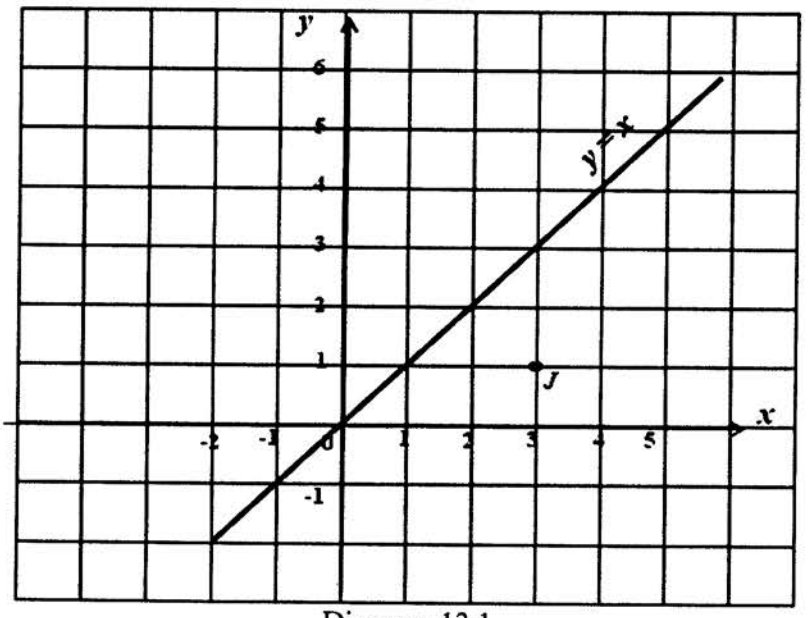

Diagram 13.1
Rajah 13.1

(a) Transformation **W** is a reflection in the line $y = x$

Transformation **M** is a translation $\begin{pmatrix} -2 \\ 3 \end{pmatrix}$

Penjelmaan ***W*** *ialah pantulan pada garis* $y = x$

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

State the coordinates of the image of point J under each of the following transformations:
Nyatakan koordinat imej bagi titik J *di bawah penjelmaan berikut:*

(i) **WM**
(ii) **MW**

[4 *marks*]
[4 *markah*]

Answer / Jawapan:
(a) (i)

(ii)

(b) Diagram 13.2 shows triangles ABC, PQR and TQS drawn on a Cartesian plane.
Rajah 13.2 *menunjukkan segitiga* ABC, PQR *dan* TQS *dilukis pada suatu satah Cartesian.*

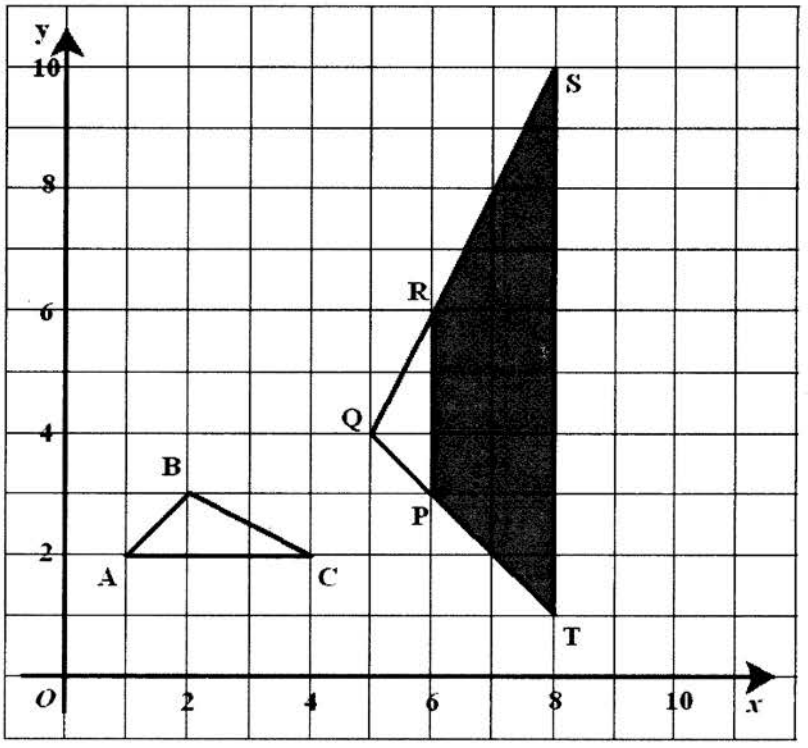

Diagram 13.2
Rajah 13.2

(i) TPQRS is the image of ABC under a combined transformation **UV**.
TPQRS *ialah imej* ABC *di bawah gabungan penjelmaan* **UV**.

Describe in full, the transformations
Huraikan selengkapnya penjelmaan

(a) **V**
(b) **U**

(ii) Given the area of the triangle of ABC is 24 m^2, calculate the area, in m^2, of the region represented by the shaded region.

Diberi luas segitiga ABC *ialah* 24 m^2, *hitung luas, dalam* m^2, *kawasan yang diwakili oleh rantau berlorek.*

[8 *marks*]
[8 *markah*]

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Answer / *Jawapan*:

(b) (i) (a) V = ...

.....

(b) U = ...

.....

(b) (ii)

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14 The data below shows the mass, in kg, of a group of 30 students.
Data di bawah menunjukkan jisim, dalam kg, *bagi sekumpulan* 30 *murid* .

63	56	50	41	61	55
32	40	46	54	42	47
53	45	53	54	59	37
57	52	44	51	47	53
40	48	59	48	39	64

(a) Based on the data, complete Table 14 in the answer space.
Berdasarkan data, lengkapkan Jadual 14 *di ruang jawapan.* [3 *marks*]
[3 *markah*]

(b) (i) State the modal class.
Nyatakan kelas mod.

(ii) Calculate the estimated mean of the mass of the group of students.
Hitung min anggaran jisim bagi sekumpulan murid itu. [4 *marks*]
[4 *markah*]

(c) For this part of the question, use the graph paper provided on page 24.
Untuk ceraian soalan ini, guna kertas graf yang disediakan pada halaman 24.

By using the scale of 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 polygon kekerapan bagi data tersebut.
[5 *marks*]
[5 *markah*]

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Answer / *Jawapan* :

(a)

Mass (kg) ***Jisim* (kg)**	**Frequency** ***Kekerapan***	**Midpoint** ***Titik tengah***
30 – 34		

Table 14
Jadual 14

(b) (i)

(ii)

(c) Refer graph on page 24.
Rujuk graf pada halaman 24.

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Graph for Question 14 / *Graf untuk Soalan* 14

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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 a rectangular base PQRS on a horizontal table. PQDEVU is the uniform cross-section of the prism. Rectangle TUVW is an inclined plane. Rectangle DEFG is a horizontal plane. PU, ST, QD, RG, EV and FW are vertical edges.

Rajah 15.1 *menunjukkan sebuah pepejal berbentuk prisma tegak dengan tapak segi empat tepat* PQRS *terletak di atas meja mengufuk. Permukaan* PQDEVU *ialah keratan rentas seragamnya. Segi empat* TUVW *ialah satah condong. Segi empat tepat* DEFG *ialah satah mengufuk. Tepi* PU, ST, QD, RG, EV *dan* FW *adalah tegak.*

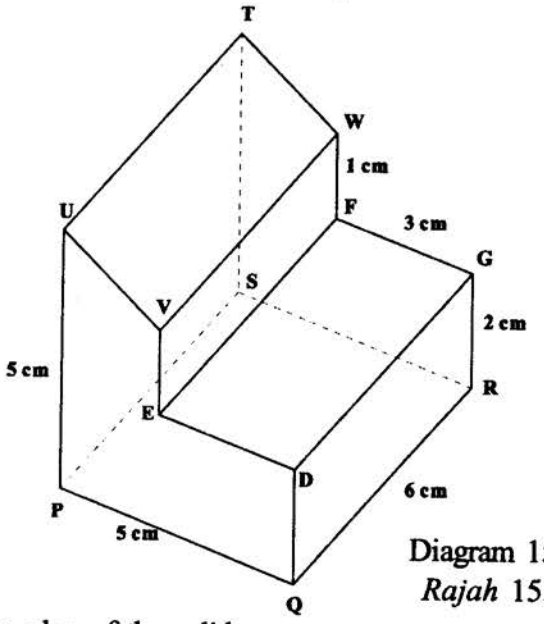

Diagram 15.1
Rajah 15.1

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

[3 *marks*]
[3 *markah*]

Answer / *Jawapan*:
(a)

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(b) Another solid prism with trapezium ABPM as the uniform cross section is joined to the solid in Diagram 15.1 at the vertical plane BCSP to form a combined solid as shown in Diagram 15.2.

Sebuah pepejal lain berbentuk prisma tegak dengan trapezium ABPM sebagai keratan rentas seragam dicantumkan kepada pepejal dalam Rajah 15.1 *pada satah mencancang BCSP untuk membentuk sebuah gabungan pepejal seperti ditunjukkan dalam Rajah* 15.2.

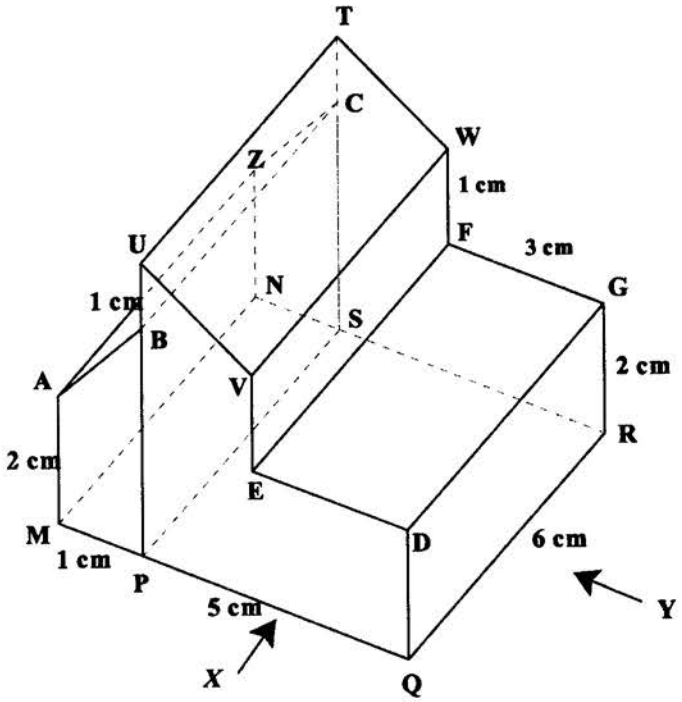

Diagram 15.2
Rajah 15.2

Draw to full scale
Lukis dengan skala penuh

(i) The elevation of the combined solid on a vertical plane parallel to MPQ as viewed from *X*.
Dongakan pepejal gabungan itu pada satah mencancang yang selari dengan MPQ sebagaimana dilihat dari X.

[4 *marks*]
[4 *markah*]

(ii) The elevation of the combined solid on a vertical plane parallel to QR as viewed from Y.
Dongakan pepejal gabungan itu pada satah mencancang yang selari dengan QR sebagaimana dilihat dari Y.

[5 *marks*]
[5 *markah*]

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Answer / *Jawapan*:

(b) (i)

(b) (ii)

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16 $K(55^oN, 35^oE)$, L, M and P are four points on the surface of the earth. KL is the diameter of the common parallel of latitude. KM is the diameter of the earth.

$K(55^oU, 35^oT)$, L, M dan P ialah empat titik di atas permukaan bumi. KL ialah diameter selarian latitud sepunya. KM ialah diameter bumi.

(a) State the longitude of L.
Nyatakan longitud bagi L.

[2 *marks*]
[2 *markah*]

(b) Calculate the shortest distance, in nautical mile, from K to L.
Hitungkan jarak terdekat, dalam batu nautika, dari K ke L.

[3 *marks*]
[3 *markah*]

(c) An aeroplane flew with the speed of 650 knot, from K due west to L. Then, the aeroplane flew due south to P. Given that P is 5 220 nautical mile due south of L.

Sebuah kapal terbang dengan kelajuan 650 knot terbang dari K arah ke barat ke L. Kemudian kapal terbang itu terbang arah ke selatan ke P. Diberi P terletak 5 220 batu nautika ke selatan L.

Calculate
Hitungkan

(i) the latitude of P.
Latitud bagi P.

(ii) the total time, in hours, taken for the whole flight.
jumlah masa, dalam jam, untuk keseluruhan penerbangan itu.

[7 marks]
[7 *markah*]

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Answer:

(a) (i)

(b)

(c) (i)

(ii)

END OF QUESTION PAPER
KERTAS SOALAN TAMAT

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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 any **four** questions from **Section B**.
   Jawab ***semua*** *soalan dalam* ***Bahagian A*** *dan mana-mana* ***empat*** *soalan daripada* ***Bahagian B****.*

3. Write your answers in the spaces provided in the question paper.
   Tulis jawapan anda pada ruang yang disediakan dalam kertas soalan ini.

4. Show your working. It may helps you to get marks.
   Tunjukkan kerja mengira anda. Ini boleh membantu anda untuk mendapatkan markah.

5. If you wish to change your answer, cross out the answer that you have done. Then write down the new answer.
   Sekiranya anda hendak menukarkan jawapan, batalkan jawapan yang telah dibuat. 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 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 diprogram.

11. Hand in this question paper to the invigilator at the end of the examination.
    Serahkan kertas soalan ini kepada pengawas peperiksaaan pada akhir peperiksaan.

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SKEMA PEMARKAHAN PEPERIKSAAN PERCUBAAN SPM 2011 PERAK

MATHEMATICS PAPER 1

1449/1

SULIT

Question	Answer
1	A
2	A
3	B
4	D
5	C
6	D
7	A
8	D
9	A
10	B
11	C
12	B
13	D
14	B
15	D
16	B
17	B
18	C
19	D
20	D

Question	Answer
21	C
22	D
23	B
24	B
25	C
26	C
27	A
28	A
29	C
30	B
31	D
32	D
33	C
34	A
35	C
36	D
37	C
38	A
39	B
40	A

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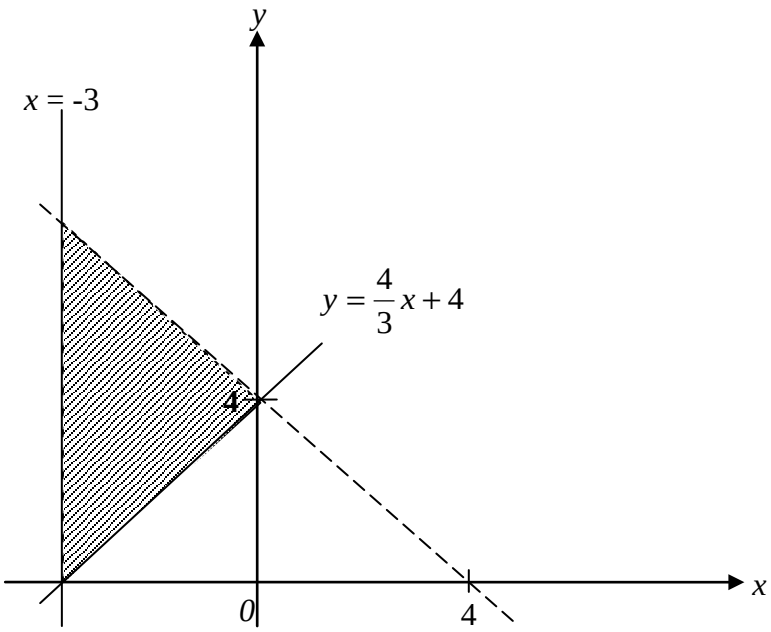
SKEMA PEMARKAHAN
PEPERIKSAAN PERCUBAAN SPM 2011
MATHEMATICS 1449/2

SECTION A [52 MARKS]			
Question	Mark Scheme	Sub Mark	Total Mark
1	 Dotted line x + y = 4 drawn Line x + y = 4 must touch the point (– 3, 7) Region shaded correctly Note : Accept 'multiple hatching'	1 1 1	3
2	$2m^2 + m - 6 = 0$ $(2m - 3)(m + 2) = 0$ $m = \frac{3}{2}$ $m = -2$ Note: Do not accept any other method.	1 1 1 1	4

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3	$6p - 2q = 18$ or $2p - 4q = 16$ or equivalent $5p = 10$ or $-\frac{10}{3}q = -10$ or equivalent OR $p = 3 + \frac{1}{3}q$ or $p = 8 + 2q$ or $q = 3p - 9$ or $q = \frac{1}{2}p - 4$ (1) $5p = 10$ or $-\frac{10}{3}q = -10$ or equivalent (1) OR $\begin{pmatrix} 2 & -\frac{2}{3} \\ 1 & -2 \end{pmatrix}\begin{pmatrix} p \\ q \end{pmatrix} = \begin{pmatrix} 6 \\ 8 \end{pmatrix}$ (1) $\begin{pmatrix} p \\ q \end{pmatrix} = \frac{1}{2(-2) - 1(-\frac{2}{3})}\begin{pmatrix} -2 & \frac{2}{3} \\ -1 & 2 \end{pmatrix}\begin{pmatrix} 6 \\ 8 \end{pmatrix}$ (1) $p = 2$ $q = -3$ Note : If $\begin{pmatrix} p \\ q \end{pmatrix} = \begin{pmatrix} 2 \\ -3 \end{pmatrix}$ award 1 mark	1 1 1 1	4
4	Identify Ð PRQ *or* Ð QRP tan ÐPRQ $= \frac{12}{5}$ *or equivalent* 67.38 or 67.4° or 67° 23’	1 1 1	3
5 (a) (i) (ii) (b) (c)	False / *Palsu* True / *Benar* If n > 7, then n > 12 *Jika n > 7, maka n > 12* Note: Do not accept ‘than’ (spelling) False / Palsu PQRS is a square *PQRS ialah segi empat sama*	1 1 1 1 1	**5**

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6 (a)	$\dfrac{7-5}{1-(-3)}$	1	
	$= \dfrac{1}{2}$	1	
(b)	$-4 = \dfrac{1}{2}(-4) + c$ (seen m = $\dfrac{1}{2}$)	1	
	$c = -2$	1	
	$y = \dfrac{1}{2}x - 2$	1	
(c)	$\dfrac{1}{2}x - 2 = 0$		
	x-intercept = 4	1	**6**
7 (a)	d = 5	1	
	e = – 4	1	
(b)	$\begin{pmatrix} 2 & -1 \\ 3 & -4 \end{pmatrix}\begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 11 \\ 9 \end{pmatrix}$	1	
	$\begin{pmatrix} x \\ y \end{pmatrix} = \dfrac{1}{(2)(-4)-(3)(-1)}\begin{pmatrix} 4 & 1 \\ -3 & 2 \end{pmatrix}\begin{pmatrix} 11 \\ 9 \end{pmatrix}$	1	
	$x = 7$	1	
	$y = 3$	1	**6**
	<u>Note :</u> $\begin{pmatrix} 7 \\ 3 \end{pmatrix}$ award 1 mark		
8.	$\dfrac{22}{7} \times 7 \times 7 \times 15$	1	
	$\dfrac{1}{3} \times \dfrac{22}{7} \times 7 \times 7 \times 6$	1	
	$\dfrac{22}{7} \times 7 \times 7 \times 15 - \dfrac{1}{3} \times \dfrac{22}{7} \times 7 \times 7 \times 6$	1	
	2002	1	**4**

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9(a)	{ (4,5), (4,6)}	1	
	$\frac{2}{24}$ or $\frac{1}{12}$	1	
(b)	{(S,4), (5,P) (5,Q) (5,R) (T,4) (6,P) (6,Q) (6,R) (U,4) (V,4)}	2	
	$\frac{10}{24}$ or $\frac{5}{12}$	1	
	Note: If all sample space listed, accept the direct answer.		**5**
10 (a)	$\frac{30}{360} \times 2 \times \frac{22}{7} \times 14$ or $\frac{60}{360} \times 2 \times \frac{22}{7} \times 21$	1	
	$21 + \frac{60}{360} \times 2 \times \frac{22}{7} \times 21 + 7 + \frac{30}{360} \times 2 \times \frac{22}{7} \times 14 + 14$	1	
	$71\frac{1}{3}$ or 71.33	1	
(b)	$\frac{60}{360} \times \frac{22}{7} \times 21 \times 21$ or $\frac{15}{360} \times \frac{22}{7} \times 14 \times 14$	1	
	$\frac{60}{360} \times \frac{22}{7} \times 21 \times 21 - \frac{15}{360} \times \frac{22}{7} \times 14 \times 14$	1	
	$205\frac{1}{3}$ or 205.3 or 205.33	1	**6**
11 (a)	4	1	
(b)	$\frac{30 - 15}{0 - 2}$ or $\frac{15 - 30}{2 - 0}$	1	
	$-\frac{15}{2}$ or -7.5	1	
(c)	$\frac{1}{2}(30 + 15) \times 2$ or $\frac{1}{2}(25 + 15)(\frac{4}{3}x - 6)$ or (4×15)	1	
	$\frac{1}{2}(30 + 15) \times 2 + (4 \times 15) + \frac{1}{2}(25 + 15)(\frac{4}{3}x - 6) = 145$	1	
	$x = 6$	1	**6**
			52

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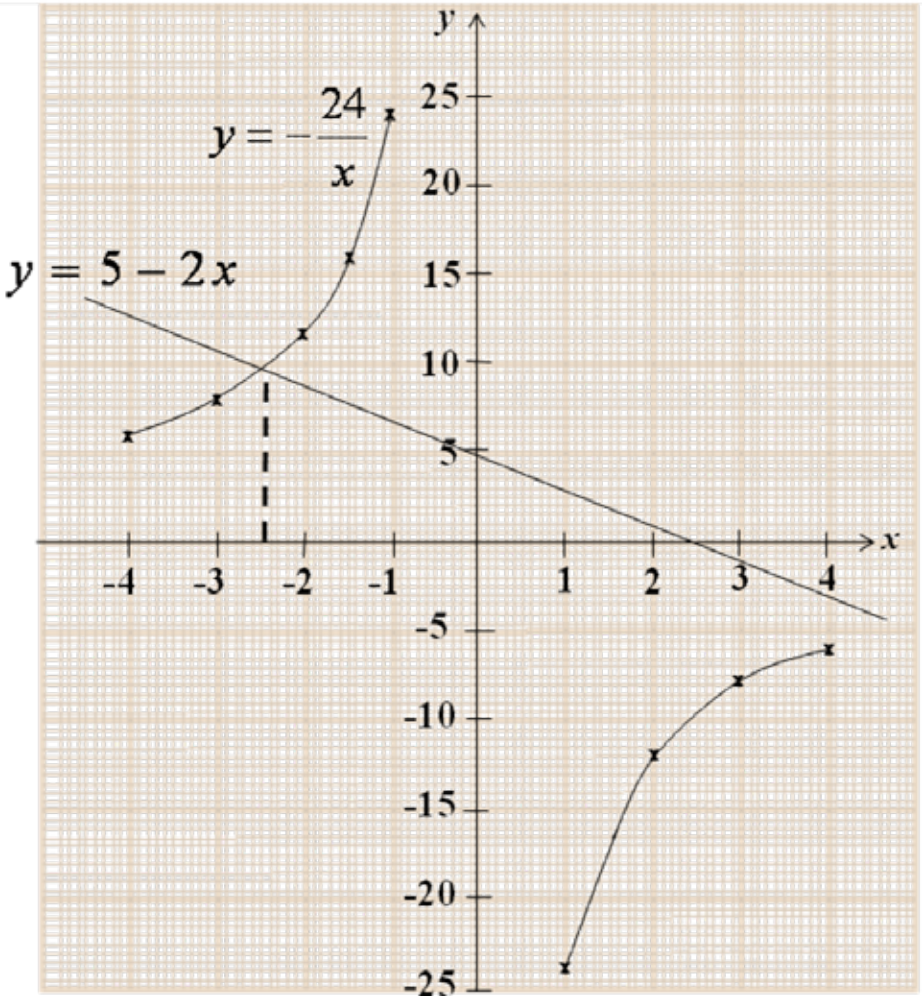
Section B		
Question	**Mark Scheme**	**Marks**
12 (a)	<table><tr><td>x</td><td>– 1.5</td><td>3</td></tr><tr><td>y</td><td>16</td><td>– 8</td></tr></table>	1 1
(b)	 · Axes drawn in the correct directions with uniform scales. · All 7 points and *2 points correctly plotted or curve passes through all the points. (7 or 8 points correctly plotted award 1 mark). · 2 smooth and continuous curve without any straight line passes through all 9 correct points using the given scales.	1 2 2

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(c) (i) ii) (d)	8.4 £ y £ 8.8 - 1.9 £ x £ - 2.1 Identify equation of $y = 5 - 2x$ Straight line $y = 5 - 2x$ correctly drawn - 2.25 £ x £ - 2.65	1 1 1 1 1
		12

Question	**Scheme of marks**	**Marks**
13(a) (i) (ii)	(4, 1) Note: Point (1, 4) award 1 mark (– 1, 6) Note: Point (1, 3) award 1 mark	2 2
(b) (i) (a) (b)	V = Rotation, 90° anti clockwise , about centre (3, 5). U = Enlargement , scale factor 3, at centre Q(5, 4) Note: Do not accept wrong spellings for rotation and enlargement.	3 3
(b) (ii)	$3^{2´}$ 24 – 24 192	1 1
		12

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Question	Scheme of marks	Marks
14 (a)		

Mass (kg) *Jisim* (kg)	Frequency *Kekerapan*	Midpoint *Titik tengah*
30 - 34	1	32
35 – 39	2	37
40 – 44	5	42
45 – 49	6	47
50 – 54	8	52
55 – 59	5	57
60 - 64	3	62

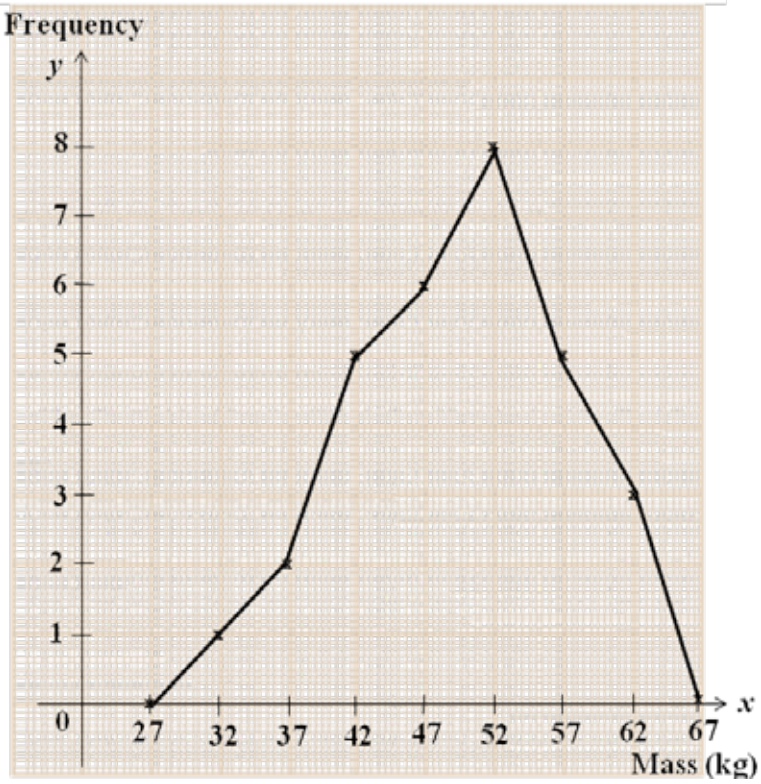
Marks: 1, 1, 1

(b) (i) 50 – 54 — 1

(ii) Mean = $\dfrac{1(32)+2(37)+5(42)+6(47)+8(52)+5(57)+3(62)}{1+2+5+6+8+5+3}$ — 2

= 49.5 — 1

(c)



- Axes drawn in the correct directions with uniform scales. — 1
- All 7 points correctly plotted — 2
- Point (27, 0) and (67, 0) correctly plotted — 1
- All the 7 points starting from (27, 0) until (67, 0) are connected correctly with straight line — 1

12

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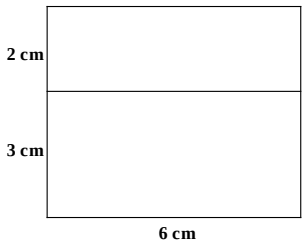
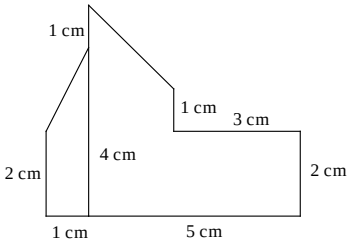
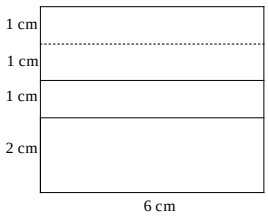
Question	Scheme of marks	marks	
15 (a)	**Plan**: The shape must be right with the rectangles. All lines must be fully drawn.  Measurement must be accurate to ± 0.2 cm and all angles at rectangle vertex = 90° ± 1 Note: The shape is correctly drawn award 1 mark	3	
b (i)	**Elevation X**: The shape must be right . All lines must be fully drawn.  Measurement must be accurate to ± 0.2 cm and all angles at rectangle vertex = 90° ± 1 Note: The shape is correctly drawn award 1 mark	4	
b (ii)	**Elevation Y**: The shape must be right with the rectangles. All lines included the dotted lines must be shown completely.  Measurement must be accurate to ± 0.2 cm and all angles at rectangle vertex = 90° ± 1 Note: The shape is correctly drawn award 1 mark	5	**12**

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Question	Scheme of marks	Marks	
16. (a)	145°W or 145° B Note : 145° or q^{o} W or q^{o} B award 1 mark	2	
(b) (i)	70° $70^{0} \times 60$	1 1	
	4 200	1	
(c) (i)	$\frac{5220}{60}$	1	
	$\frac{5220}{60} - 55$	1	
	32°S	1	
(ii)	Using cos 55°	1	
	180 ´ 60 ´ cos 55°	1	
	$\frac{180' \ 60' \ \cos 55^{o} + 5220}{650}$	1	
	17.56	1	
			12

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