

1449/1
Matematik
Kertas 1
September
2009
1¼ jam

**PEPERIKSAAN PERCUBAAN
SIJIL PELAJARAN MALAYSIA
NEGERI PERAK
2009**

MATEMATIK

KERTAS 1

Satu jam lima belas minit

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 20 halaman bercetak.

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 = $\pi d = 2\pi r$

3. Area of circle = πr^2
Luas bulatan = πr^2

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

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

6. Volume of right prism = cross sectional area x length
Isipadu prisma tegak = luas keratan rentas x panjang

7. Volume of cylinder = $\pi r^2 h$
Isipadu silinder = $\pi r^2 t$

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

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

10. Volume of right pyramid = $\frac{1}{3}$ 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 = $(n - 2) \times 180^\circ$

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

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

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

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

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

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

$$15. \quad \text{Area of image} = k^2 \times \text{area of object}$$
$$\text{Luas imej} = k^2 \times \text{luas objek}$$

- 1 Round off 17 083 correct to three significant figures.
Bundarkan 17 083 betul kepada tiga angka bererti.
- A 17 000
B 17 080
C 17 090
D 17 100
- 2 Express 4 730 000 in standard form.
Ungkapkan 4 730 000 dalam bentuk piawai.
- A 4.73×10^6
B 4.73×10^4
C 4.73×10^{-4}
D 4.73×10^{-6}
- 3 $0.000087 - 6.4 \times 10^{-6}$
- A 1.3×10^{-7}
B 1.3×10^{-6}
C 8.06×10^{-5}
D 8.06×10^{-6}
- 4 The area of a rectangular house plot is 6.8 km^2 . Its width is 2 500 m. The length in m, of the house plot is
Luas tapak rumah yang berbentuk segi empat tepat ialah 6.8 km^2 . Lebar tapak rumah itu ialah 2 500 m. Panjang, dalam m, tapak rumah ialah
- A 2.72×10^3
B 2.72×10^4
C 4.3×10^3
D 4.3×10^4
- 5 What is the value of the digit 3, in base ten, in the number 2361_8 ?
Apakah nilai bagi digit 3, dalam asas sepuluh, dalam nombor 2361_8 ?
- A 75
B 101
C 192
D 300
- 6 $110111_2 + 11101_2 =$
- A 1101000_2
B 1010100_2
C 1110001_2
D 1011000_2

- 7 In Diagram 1, PQRSTU is a regular hexagon and RSV is a straight line.
 Dalam Rajah 1, PQRSTU ialah sebuah heksagon sekata dan RSV ialah garis lurus.

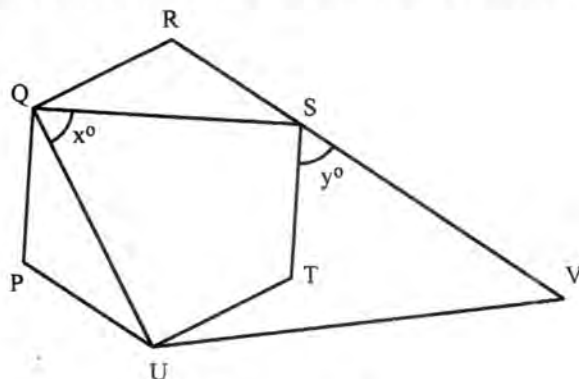


Diagram 1

Find the value of $x + y$
 Carikan nilai $x + y$

- A 100°
 B 120°
 C 150°
 D 160°
- 8 In Diagram 2, PQR is a tangent to the circle center O.
 Dalam Rajah 2, PQR ialah tangen kepada bulatan berpusat O.

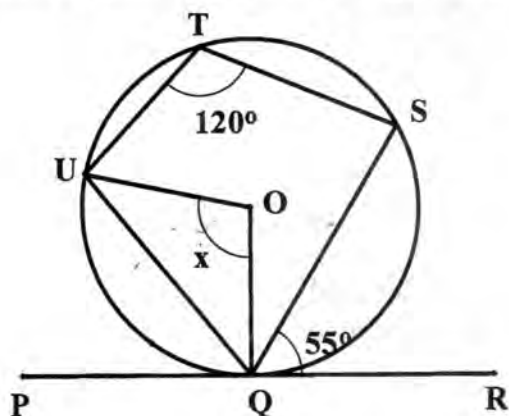


Diagram 2

Find the value of x
 Carikan nilai x

- A 55°
 B 60°
 C 105°
 D 130°

- 9 Diagram 3 shows points plotted on a Cartesian plane.
Rajah 3 menunjukkan beberapa titik pada sebuah satah Cartesian.

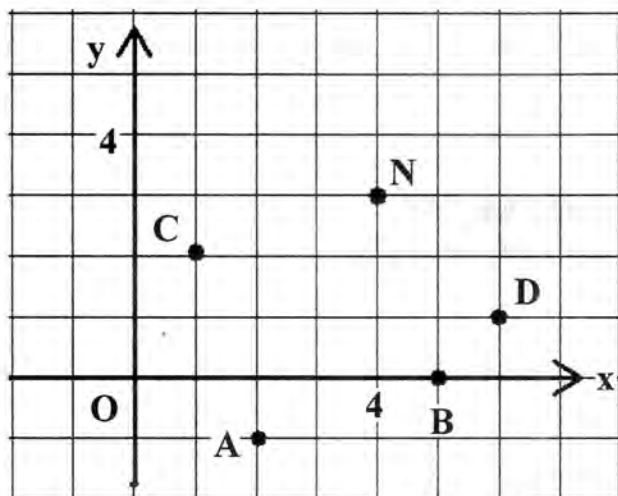


Diagram 3

Which of the point A, B, C or D, is the image of point N under a clockwise rotation of 90° about the center (3, 1)?

Antara titik A, B, C atau D, yang manakah imej bagi titik N di bawah putaran 90° ikut arah jam pada pusat (3, 1)?

- 10 In Diagram 4, PQR is the image of LMN under an enlargement
Dalam Rajah 4, PQR ialah imej kepada LMN di bawah satu pembesaran.

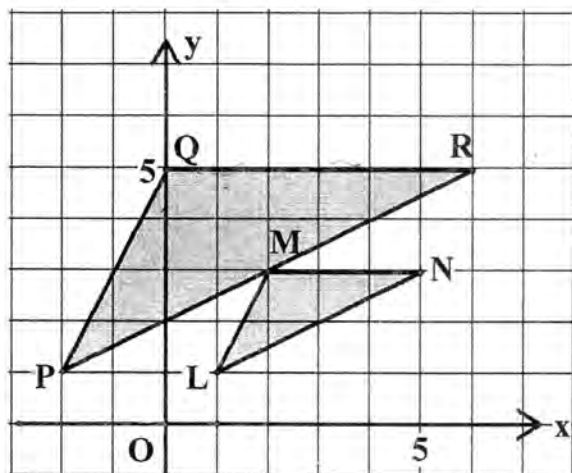


Diagram 4

The centre of the enlargement and its scale factor are
Pusat pembesaran dan faktor skala ialah

	Centre of enlargement Pusat Pembesaran	Scale factor Faktor skala
A	(4, 1)	3
B	(4, 1)	2
C	(1, 4)	3
D	(1, 4)	2

- 11 It is given that $\cos \theta = -0.2578$ and $180^\circ \leq \theta \leq 360^\circ$. Find the value of θ
 Diberi bahawa $\cos \theta = -0.2578$ dan $180^\circ \leq \theta \leq 360^\circ$. Carikan nilai θ
- A $194^\circ 56'$
 B $255^\circ 4'$
 C $224^\circ 56'$
 D $345^\circ 4'$
- 12 In Diagram 5, S is the midpoint of the straight line QT.
 Dalam Rajah 5, S ialah titik tengah bagi garis lurus QST.

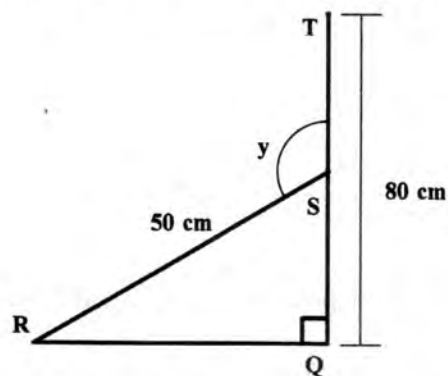


Diagram 5

The value of $\tan y$ is
 Nilai $\tan y$ ialah

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

- 13 Diagram 6 shows the graph of $y = \sin 2x$
Rajah 6 menunjukkan graf $y = \sin 2x$.

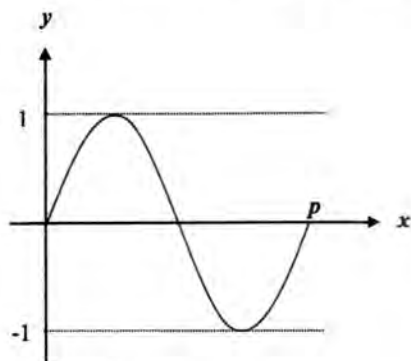


Diagram 6

The value of p is
Nilai p ialah

- A 90°
 B 180°
 C 270°
 D 360°
- 14 Diagram 7 shows a cuboid with a horizontal base TUVW.
Rajah 7 menunjukkan sebuah kuboid dengan tapak mengufuk TUVW.

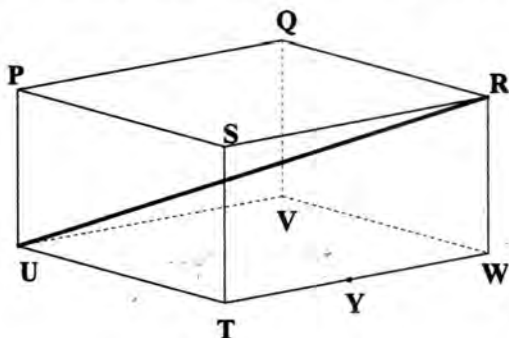


Diagram 7

Name the angle between the line RU and the base TUVW.
Namakan sudut di antara garis RU dengan tapak TUVW.

- A $\angle RUV$
 B $\angle RUT$
 C $\angle RUW$
 D $\angle RUY$

- 15 In Diagram 8, RQ and MNP are two vertical poles on a horizontal plane.
 Dalam Rajah 8, RQ dan MNP ialah dua batang tiang tegak pada satah mengufuk.

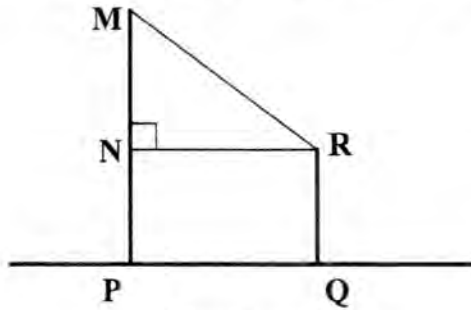


Diagram 8

The angle of elevation of point M from point Q is
 Sudut dongakan titik M dari titik Q ialah

- A $\angle MQR$
 B $\angle MQN$
 C $\angle MQP$
 D $\angle NQP$
- 16 In diagram 9, MN and PQ are two vertical poles on a horizontal plane.
 Dalam rajah 9, MN dan PQ ialah dua batang tiang tegak pada satah mengufuk.

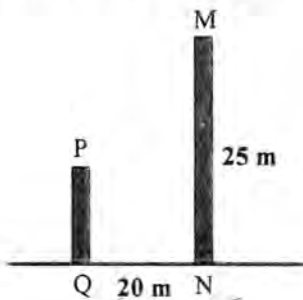


Diagram 9

The angle of depression of peak P from peak M is 34° . Calculate the height, in m, of the pole PQ.
 Sudut tunduk puncak P dari puncak M ialah 34° . Hitungkan tinggi, dalam m, tiang PQ.

- A 4.65
 B 8.42
 C 11.51
 D 13.82

- 17 Diagram 10 shows three points P, Q and R on a horizontal plane.
Rajah 10 menunjukkan tiga titik P, Q dan R pada satah mengufuk

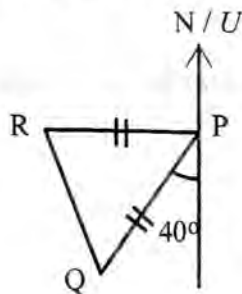


Diagram 10

Given that the bearing of R from P is 260° , find the bearing of Q from R.

Diberi bearing R dari P ialah 260° , cari bearing Q dari R

- A 140°
B 150°
C 290°
D 330°
- 18 Diagram 11 shows the position of five towns A, B, C, D and X on the surface of the earth.
Rajah 11 menunjukkan kedudukan lima buah bandar A, B, C, D dan X pada permukaan bumi.

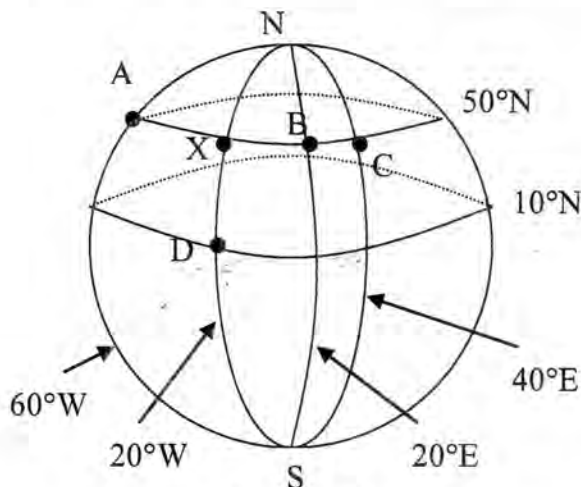


Diagram 11

Which of the towns A, B, C and D is located due east of X with difference in longitude of 40° ?
Antara bandar A, B, C dan D yang manakah berada di Timur X dengan beza longitud 40° ?

- 19 $(2x - y)^2 - x(x - y) =$
- A $3x^2 - 3xy + y^2$
B $3x^2 - 5xy + y^2$
C $3x^2 + xy - y^2$
D $3x^2 - 5xy - y^2$

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

Ungkapkan $\frac{p-3}{p^2} - \frac{p+2}{p}$ sebagai satu pecahan tunggal dalam bentuk termudah.

- A $\frac{-3-p-p^2}{p}$
- B $\frac{-3-p-p^2}{p^2}$
- C $\frac{-3+p-p^2}{p}$
- D $\frac{-3+p-p^2}{p^2}$
- 21 Given that $\frac{y}{3} = \frac{4y-1}{\sqrt{w}}$, express w in terms of y

Diberi $\frac{y}{3} = \frac{4y-1}{\sqrt{w}}$, ungkapkan w dalam sebutan y

- A $w = \frac{3(4y-1)^2}{y}$
- B $w = \frac{3(4y^2-1)^2}{y^2}$
- C $w = 9\left(\frac{4y-1}{y}\right)^2$
- D $w = \left(\frac{36y-1}{y}\right)^2$

22 Given that $3^x = \frac{9}{3^{2x}}$, find the value of x .

Diberi $3^x = \frac{9}{3^{2x}}$, cari nilai x

A 2

B 1

C $\frac{2}{3}$

D $\frac{1}{2}$

23 Simplify $\left(\frac{9^2 \times 5^{\frac{1}{3}}}{15^2}\right)^3$

Ringkaskan $\left(\frac{9^2 \times 5^{\frac{1}{3}}}{15^2}\right)^3$

A $3^2 \times 5^{-3}$

B $3^4 \times 5^{-4}$

C $3^6 \times 5^{-5}$

D $3^{10} \times 5^{-1}$

24 The solution for $4x + 5 < 1 - \frac{2x}{3}$ is

Penyelesaian bagi $4x + 5 < 1 - \frac{2x}{3}$ ialah

A $x < -\frac{7}{3}$

B $x < -\frac{6}{7}$

C $x > -\frac{6}{7}$

D $x > -\frac{2}{7}$

25 Solve $\frac{1}{3}(1 - 2k) + 3 = 2(k - 1)$

Selesaikan $\frac{1}{3}(1 - 2k) + 3 = 2(k - 1)$

- A -2
- B -4
- C 2
- D 4

- 26 Diagram 12 is a bar chart which is incomplete, showing the number of fruit trees in an orchard.
Rajah 12 ialah carta bar yang tidak lengkap menunjukkan bilangan pokok buah di sebuah dusun

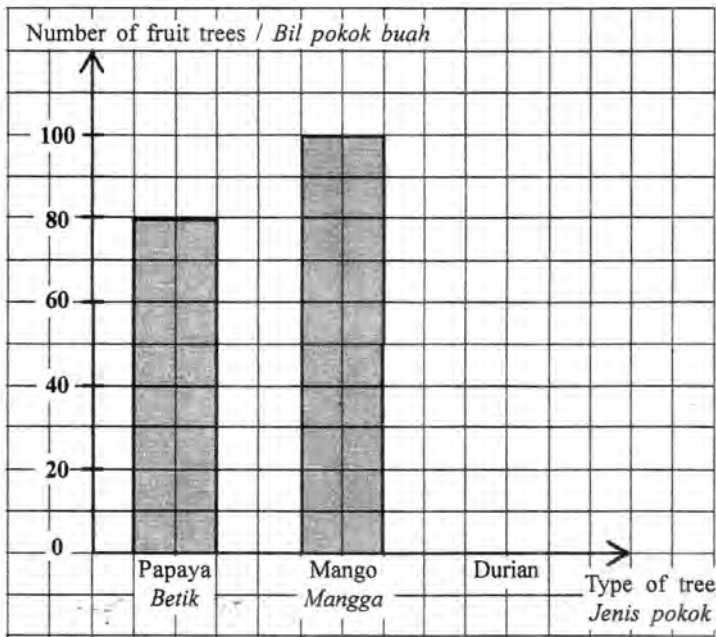


Diagram 12

The ratio of the number of Mango trees to the number of Durian trees is 5 : 3.

Find the total number of fruit trees in the orchard.

Nisbah bilangan pokok Mangga kepada pokok Durian ialah 5 : 3.

Cari jumlah pokok buah di dusun tersebut

- A 240
- B 280
- C 300
- D 320

- 27 Table 1 shows a set of six pieces of data where x represents an integer
Jadual 1 menunjukkan set data di mana x mewakili integer

5, x , x , 12, 10, 15

Table 1

The mean for the data is 9. Calculate the difference between the mode and the median
Min bagi data tersebut ialah 9. Hitungkan perbezaan di antara mod dan median.

- A 2
 B 4
 C 6
 D 8
- 28 Diagram 13 shows graph of a function.
Rajah 13 menunjukkan graf fungsi.

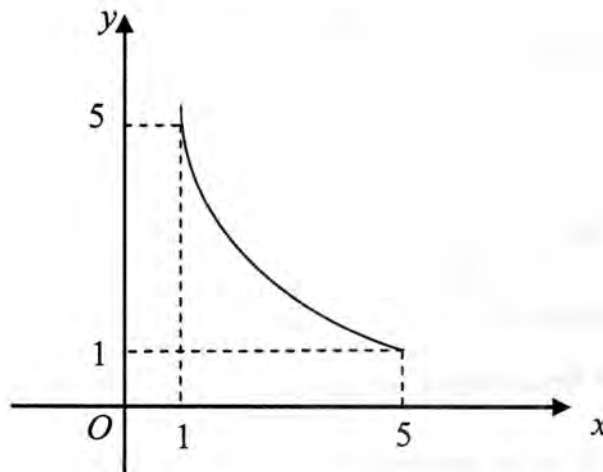


Diagram 13

The equation of the function is
Persamaan bagi fungsi tersebut ialah

- A $y = -\frac{5}{x}$
 B $y = -\frac{x^2}{5}$
 C $y = \frac{5}{x}$
 D $y = \frac{x^2}{5}$

- 29 Given $\xi = \{a, b, c, d, e, i, o, u\}$, $X = \{a, i, u\}$, $Y = \{a, b, d\}$ and $Z = \{b, c, d\}$.
 Diberi $\xi = \{a, b, c, d, e, i, o, u\}$, $X = \{a, i, u\}$, $Y = \{a, b, d\}$ dan $Z = \{b, c, d\}$.

Find $n[(X' \cap Y) \cup Z]$

Cari $n[(X' \cap Y) \cup Z]$

- A 2
 B 3
 C 4
 D 5

- 30 Diagram 14 is a Venn diagram, which shows sets J , K and M . The universal set $\xi = J \cup K \cup M$.
 Rajah 14 ialah gambar rajah Venn yang menunjukkan set J , K dan M . Set semesta ialah $\xi = J \cup K \cup M$.

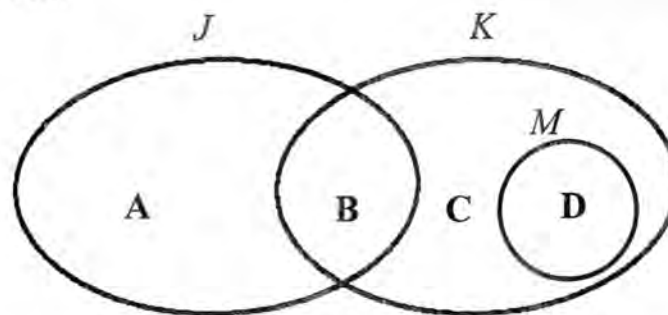


Diagram 14

Which of the region, A, B, C, or D represents the set $(J \cap K)' \cap M$?

Antara rantau A, B, C atau D yang mana mewakili set $(J \cap K)' \cap M$?

- 31 Given a universal set, $\xi = \{x : x \text{ is an integer, } 16 \leq x \leq 28\}$ and
 $T = \{x : x \text{ are numbers where the sum of its digits is less than } 5\}$.
 Diberi set semesta, $\xi = \{x : x \text{ ialah integer, } 16 \leq x \leq 28\}$ dan
 $T = \{x : x \text{ adalah nombor dimana hasil tambah digitnya kurang dari } 5\}$.

Find $n(T')$

Cari $n(T')$

- A 3
 B 7
 C 10
 D 11

- 32 In Diagram 15, the gradient of the straight line $TV = -\frac{3}{4}$

Dalam Rajah 15, kecerunan garis lurus $TV = -\frac{3}{4}$

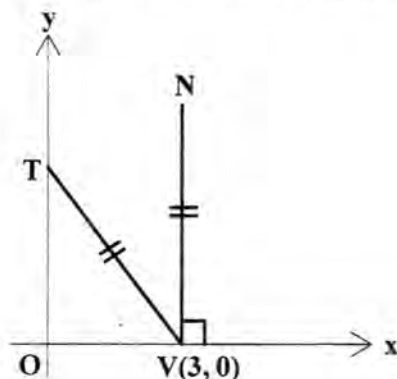


Diagram 15

Find the coordinates of point N .

Cari koordinat bagi titik N .

- A (4, 3)
 B (3, 4)
 C (3, 5)
 D (4, 5)
- 33 Find the y -intercept of the straight line $6x - 5y = 10$
Cari pintasan- y bagi garis lurus $6x - 5y = 10$
- A 6
 B 2
 C - 5
 D - 2
- 34 The customers of a certain shop consist of 32 adults and a few children. If a customer is chosen at random from the shop, the probability that the customer is a child is $\frac{3}{7}$.
Pelanggan di sebuah kedai terdiri daripada 32 orang dewasa dan sebilangan kanak-kanak. Jika seorang pelanggan dipilih secara rawak daripada kedai itu, kebarangkalian pelanggan itu kanak-kanak ialah $\frac{3}{7}$.
- Calculate the number of children among the customers of the shop.
Hitungkan bilangan pelanggan kanak-kanak di kedai itu.
- A 24
 B 30
 C 54
 D 60

- 35 A bag contains 3 black cards, 7 red cards and 5 blue cards. A card is picked at random from the bag. State the probability of getting a card that is not black.
Sebuah beg mengandungi 3 keping kad hitam, 7 keping kad merah dan 5 keping kad biru. Sekeping kad diambil secara rawak dari beg. Nyatakan kebarangkalian mendapatkan kad bukan berwarna hitam.

- A $\frac{1}{5}$
B $\frac{1}{3}$
C $\frac{7}{15}$
D $\frac{4}{5}$

- 36 F varies directly as the square root of m and inversely as the square of n . Given that $F = \frac{4}{5}$ when $m = 64$ and $n = 5$, express F in terms of m and n .
 F berubah secara langsung dengan punca kuasa dua m dan secara songsang dengan kuasa dua n . Diberi $F = \frac{4}{5}$ apabila $m = 64$ dan $n = 5$, ungkapkan F dalam sebutan m dan n .

- A $F = \frac{3\sqrt{m}}{2n^2}$
B $F = \frac{5\sqrt{m}}{2n^2}$
C $F = \frac{2n^2}{3\sqrt{m}}$
D $F = \frac{3n^2}{4\sqrt{m}}$

- 37 It is given that $w \propto \frac{1}{n^3}$ and $w = 5$ when $n = 2$. Calculate the value of n when $w = \frac{5}{8}$.

Diberi bahawa $w \propto \frac{1}{n^3}$ dan $w = 5$ apabila $n = 2$. Hitungkan nilai bagi n apabila $w = \frac{5}{8}$.

- A 4
B 16
C 24
D 64

- 38 Table 2 shows some values of P , Q , and R .
Jadual 2 menunjukkan nilai bagi P , Q dan R .

P	$\frac{2}{3}$	$\frac{1}{5}$
Q	2	4
R	9	m

Table 2

Given that $P \propto \frac{1}{Q\sqrt{R}}$, calculate the value of m .

Diberi $P \propto \frac{1}{Q\sqrt{R}}$, hitungkan nilai bagi m

- A 5
- B 15
- C 18
- D 25

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

A $\begin{pmatrix} -3 & -6 \\ -6 & 5 \end{pmatrix}$

C $\begin{pmatrix} 7 & -2 \\ -3 & 3 \end{pmatrix}$

B $\begin{pmatrix} -4 & -2 \\ -6 & 2 \end{pmatrix}$

D $\begin{pmatrix} -3 & -2 \\ -6 & 3 \end{pmatrix}$

40 Given that $\begin{pmatrix} -4 \\ 2x \end{pmatrix} (y \ 5) = \begin{pmatrix} 20 & -20 \\ 30 & -30 \end{pmatrix}$, calculate the value of x and y .

Diberi $\begin{pmatrix} -4 \\ 2x \end{pmatrix} (y \ 5) = \begin{pmatrix} 20 & -20 \\ 30 & -30 \end{pmatrix}$, hitungkan nilai bagi x dan y

- A $x = -3, y = -5$
- B $x = -6, y = -5$
- C $x = 3, y = 5$
- D $x = 5, y = 3$

SULIT

NAMA:.....

NO. ANGKA GILIRAN:.....

1449/2

Matematik

Kertas 2

September

2009

2½ jam

**PEPERIKSAAN PERCUBAAN
SIJIL PELAJARAN MALAYSIA
NEGERI PERAK
2009**

MATEMATIK

KERTAS 2

Dua jam tiga puluh minit

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

MAKLUMAT UNTUK CALON

1. Kertas soalan ini mengandungi 16 soalan
2. Jawab **semua** soalan di **Bahagian A** dan 4 soalan di **Bahagian B**
3. Kertas soalan ini adalah dalam dwibahasa.
4. Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan.
5. Satu senarai rumus disediakan di halaman 2 hingga halaman 4.
6. Sebuah buku sifir matematik empat angka disediakan.
7. Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogramkan.
8. Jawapan hendaklah ditulis dengan jelas dalam ruang yang disediakan dalam kertas soalan.
9. Tunjukkan langkah-langkah penting dalam kerja mengira anda. Ini boleh membantu anda untuk mendapatkan markah.
10. Kertas soalan ini hendaklah diserahkan di akhir peperiksaan

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

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

Section A
Bahagian A
(52 marks)

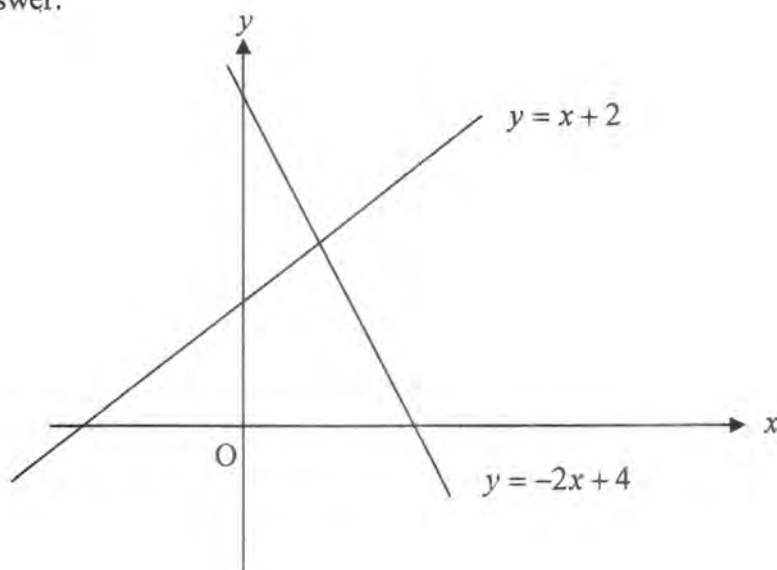
Answer **all** questions in this section.
Jawab semua soalan dalam bahagian ini.

- 1 On the graph provided, shade the region which satisfies the three inequalities $y \geq -2x + 4$, $y \leq x + 2$ and $x < 2$.

Pada graf yang disediakan, lorekkan rantau yang memuaskan ketiga-tiga ketaksamaan $y \geq -2x + 4$, $y \leq x + 2$ and $x < 2$.

[3 marks]

Answer:



- 2 Solve the quadratic equation
Selesaikan persamaan kuadratik

$$(h+1)(h-5) = \frac{2h-10}{3}$$

[4 marks]

Answer:

- 3 Diagram 1 shows a right prism with a horizontal rectangular base $CDEF$. The triangle AFE is the uniform cross section of the prism.

Rajah 1 menunjukkan satu prisma tegak dengan tapak segiempat $CDEF$. Segitiga AFE adalah keratan rentas yang seragam pada prisma tersebut.

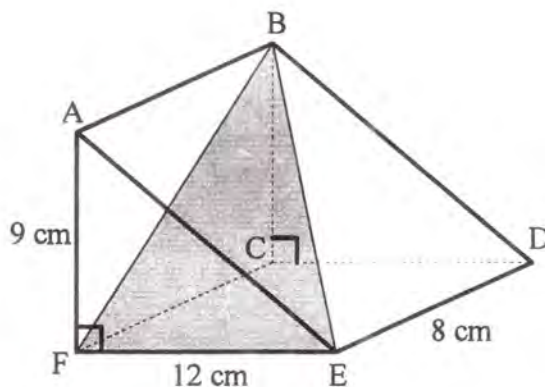


Diagram 1

Name and calculate the angle between the plane BEF and the base $CDEF$.
Nama dan hitungkan sudut antara satah BEF dan tapak $CDEF$.

[4 marks]

Answer :

- 4 Calculate the value of m and of n that satisfy the following simultaneous linear equations.

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Hitung nilai m dan n yang memuaskan persamaan linear serentak berikut.

$$\frac{1}{2}m - 3n = 10$$

$$5m + 6n = -8$$

[4 marks]

Answer:

- 5 Diagram 2 shows a combined solid consists of a right prism and a quadrant of a cylinder which are joined at the plane **BEIH**. Trapezium **ABHG** is the uniform cross section of the prism.

*Rajah 2 menunjukkan sebuah gabungan pepejal yang terdiri daripada sebuah prisma tegak dan sebuah sukuan silinder yang tercantum pada satah **BEIH**. Trapezium **ABHG** ialah keratan rentas seragam prisma itu.*

It is given that $AB = 10\text{cm}$, $GH = 6\text{cm}$ and $CD = 12\text{cm}$.

Diberi bahawa $AB = 10\text{cm}$, $GH = 6\text{cm}$ dan $CD = 12\text{cm}$.

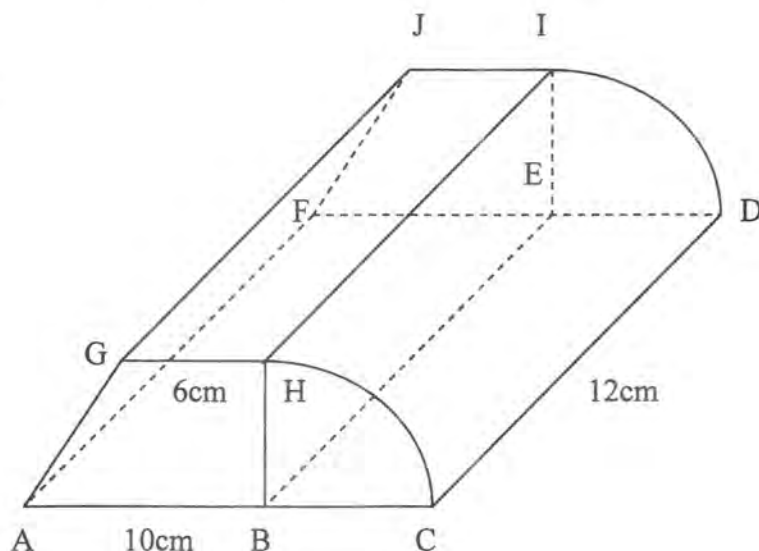


Diagram 2

The volume of the right prism is 672cm^3 . Using $\pi = \frac{22}{7}$, calculate

Isipadu prisma tegak ialah 672cm^3 . Dengan menggunakan $\pi = \frac{22}{7}$, hitung

- the radius, in cm, of the quadrant cylinder,
jejari, dalam cm, sukuan silinder itu,
- the volume, in cm^3 , of the quadrant cylinder,
isipadu, dalam cm^3 , sukuan silinder itu.

[4 marks]

- 6 (a) Identify the **antecedent** and the **consequent** in the following implication:
*Tentukan **antejadian** dan **akibat** bagi hujah yang berikut:*

If a polygon has 5 sides, then the polygon is a pentagon.

Jika sebuah poligon mempunyai 5 sisi, maka poligon itu adalah sebuah pentagon.

- (b) Complete the premise in the following argument:

Premise 1 : _____

Premise 2 : $m \neq 2$.

Conclusion : The lines $y = 2x + 6$ and $y = mx + 10$ are not parallel.

Lengkapkan premis dalam hujah berikut:

Premis 1 : _____

Premis 2 : $m \neq 2$

Kesimpulan : *Garisan $y = 2x + 6$ dan $y = mx + 10$ adalah tidak selari.*

- (c) Make a general conclusion by induction for the sequence 5, 17, 37, 65, ... which follows the pattern below :

Buat satu kesimpulan secara aruhan bagi senarai nombor 5, 17, 37, 65, ... yang mengikut pola berikut :

$$5 = 1 + 4(1)^2$$

$$17 = 1 + 4(2)^2$$

$$37 = 1 + 4(3)^2$$

$$65 = 1 + 4(4)^2$$

[5 marks]

Answer :

- (a) Antecedent / *antejadian* :

Consequent / *akibat* :

- (b) Premise 1/ *Premis 1* :

- (c)

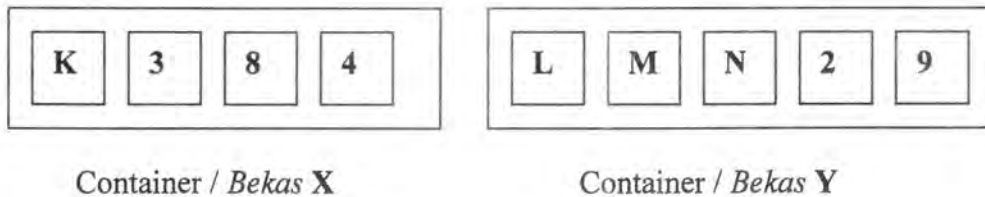


Diagram 3

Diagram 3 shows nine labeled cards in container X and container Y. A card is picked at random from each of the containers. By listing the sample of all the possible outcomes of the event, find the probability that

Rajah 3 menunjukkan sembilan kad berlabel di dalam bekas X dan bekas Y. Satu kad dipilih secara rawak daripada setiap bekas. Dengan menyenaraikan sampel bagi semua kesudahan peristiwa yang mungkin, cari kebarangkalian bahawa

- (a) both cards are labeled with a letter,
kedua-dua kad itu berlabel dengan huruf,
- (b) one card is labeled with a number and the other card is labeled with a letter.
satu kad berlabel dengan nombor dan satu kad lagi dengan huruf.

[5 marks]

Answer:

(a)

(b)

- 8 In the diagram 4, QRS is an arc of a circle with centre P and $PTSU$ is an arc of a circle with centre O .

Di dalam rajah 4, QRS ialah lengkok bulatan berpusat di P dan $PTSU$ adalah lengkok bulatan berpusat di O .

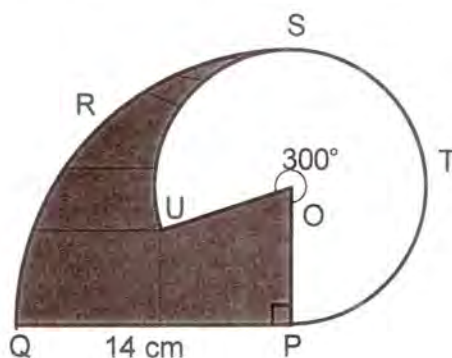


Diagram 4

Given that $\angle OPQ = 90^\circ$ and using $\pi = \frac{22}{7}$, calculate

Diberi bahawa $\angle OPQ = 90^\circ$ dan dengan menggunakan $\pi = \frac{22}{7}$, hitung

- the perimeter of the whole diagram,
perimeter seluruh rajah itu,
- the area of the shaded region.
luas kawasan yang berlorek.

[6 marks]

Answer:

(a)

(b)

- 9 In diagram 5, **OPQ** is the distance-time graph of a car traveling from town **A** to town **B**. The straight line **RPS** represents the distance-time graph of a van traveling from town **B** to town **A**. *papercollection*

Di rajah 5, OPQ adalah graf jarak-masa bagi perjalanan sebuah kereta dari bandar A ke bandar B. Garisan RPS mewakili graf jarak-masa bagi perjalanan sebuah van dari bandar B ke bandar A.

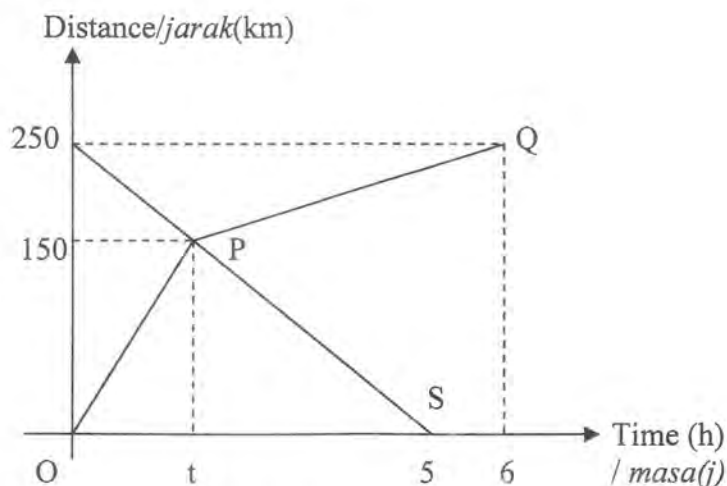


Diagram 5

Calculate
Kira

- the average speed, in km h^{-1} , of the car from town **A** to town **B**,
laju purata, dalam km j^{-1} , bagi perjalanan kereta dari bandar A ke bandar B.
- the value of t , if the van traveled at uniform speed.
nilai t , jika van itu bergerak dengan laju seragam.

[5 marks]

Answer:

(a)

(b)

- 10 In diagram 6, PQ and ST are parallel lines. The gradient of straight line QSR is -2 and the equation of the straight line PQ is $y - 2x = 6$.

Di dalam rajah 6, PQ dan ST adalah garis selari. Kecerunan garis lurus QSR ialah -2 dan persamaan garis lurus PQ ialah $y - 2x = 6$.

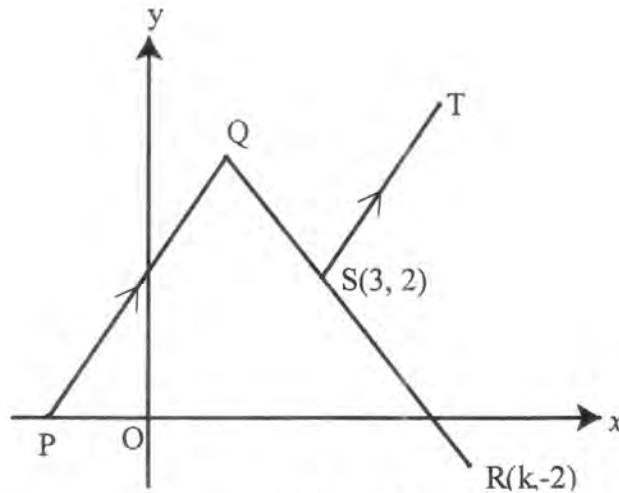


Diagram 6

Find the
Cari

- x -intercept of straight line PQ ,
pintasan- x bagi garis lurus PQ .
- value of k ,
nilai k ,
- equation of straight line ST .
persamaan bagi garis lurus ST .

[5 marks]

Answer:

(a)

(b)

(c)

11 Given matrix $\mathbf{G} = \begin{pmatrix} 5 & r \\ 4 & -2 \end{pmatrix}$,

Diberi matriks $\mathbf{G} = \begin{pmatrix} 5 & r \\ 4 & -2 \end{pmatrix}$,

- (a) find the value of r if matrix \mathbf{G} has no inverse,
cari nilai r jika matriks \mathbf{G} tidak mempunyai songsang,
- (b) if $r = -2$, find the inverse matrix of \mathbf{G} .
jika $r = -2$, cari matriks songsang bagi \mathbf{G} .
- (c)

$$\begin{pmatrix} 5 & -2 \\ 4 & -2 \end{pmatrix} \begin{pmatrix} v \\ w \end{pmatrix} = \begin{pmatrix} 1 \\ 2 \end{pmatrix}$$

hence, using matrix method, find the values of v and of w .
seterusnya dengan menggunakan kaedah matriks, hitung nilai v dan nilai w .

[7 marks]

Answer :

(a)

(b)

(c)

Section B
Bahagian B
[48 marks]

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

- 12 The Diagram 7 shows quadrilaterals **ABCD** and **IJKL** drawn on a Cartesian plane.

Rajah 7 menunjukkan segi empat **ABCD** dan **IJKL** yang dilukis di atas satah Cartesian.

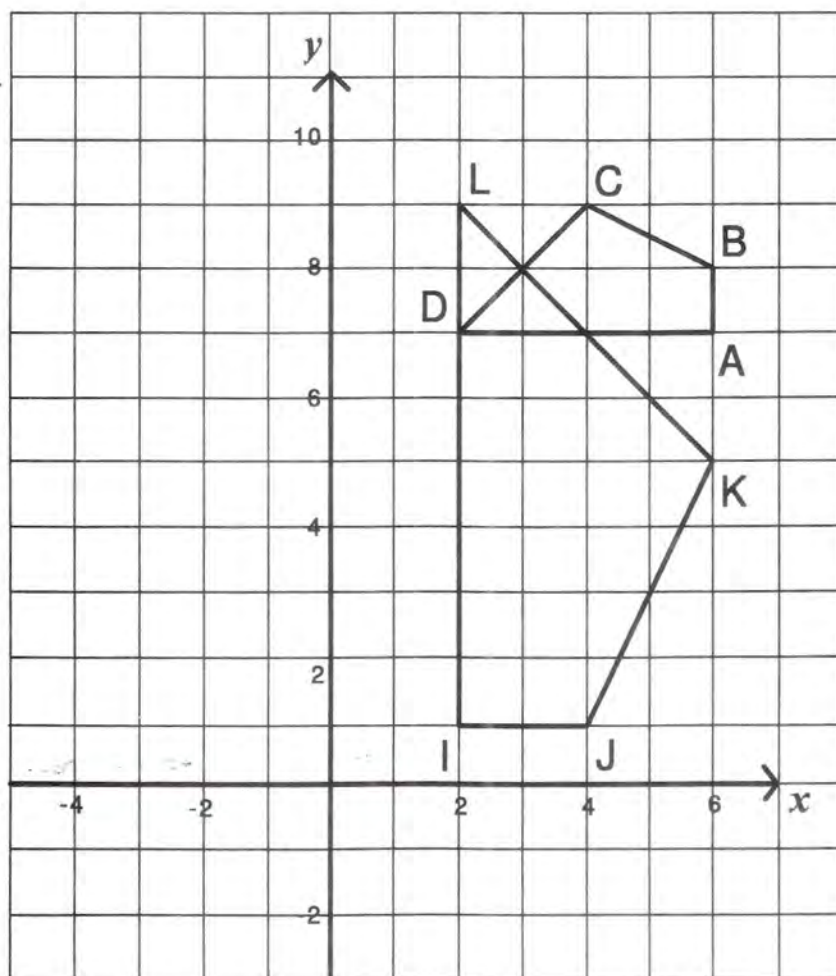


Diagram 7

- a) Transformation **M** is a translation $\begin{pmatrix} -3 \\ 3 \end{pmatrix}$. Transformation **N** is a reflection in the line $y = 3$.

Penjelmaan **M** ialah translasi $\begin{pmatrix} -3 \\ 3 \end{pmatrix}$. Penjelmaan **N** ialah pantulan pada garis $y = 3$.

State the coordinates of the image of point **I** under the following transformation.
*Nyatakan koordinat imej bagi titik **I** di bawah penjelmaan berikut :*

i. M^2

ii. MN

[3 marks]

b) **IJKL** is the image of **ABCD** under the combined transformation **WY**.

***IJKL** adalah imej bagi **ABCD** di bawah gabungan penjelmaan **WY**.*

Describe in full
Huraikan selengkapnya

i) the transformation **Y**.
*penjelmaan **Y**.*

ii) the transformation **W**.
*penjelmaan **W**.*

[5 marks]

c) Given that the area of **IJKL** is 120cm^2 , find the area of **ABCD** in cm^2 .

*Diberi luas **IJKL** ialah 120cm^2 , hitungkan luas **ABCD** dalam cm^2 .*

[4 marks]

Answer :

a) (i)

(ii)

b) (i) **Y** :

.....

(ii) **W** :

.....

c)

- 13 (a) Complete the Table 2 in the answer space provided for the equation

$$y = 3 + 2x - x^2.$$

Lengkapkan Jadual 2 di ruang jawapan untuk persamaan $y = 3 + 2x - x^2$.

[2 marks]

- b) For this part of question, use the graph paper provided on page 20.
You may use a flexible curve ruler.

Untuk ceraiian soalan ini, gunakan kertas graf yang disediakan pada halaman 20.
Anda boleh menggunakan pembaris fleksible.

By using a scale of 2 cm to 0.5 unit on the x -axis and 2 cm to 0.5 unit on the y -axis, draw the graph of $y = 3 + 2x - x^2$, for $-0.5 \leq x \leq 3.2$.

Dengan menggunakan skala 2 cm kepada 0.5 unit pada paksi- x dan 2 cm kepada 0.5 unit pada paksi- y , lukiskan graf $y = 3 + 2x - x^2$, bagi nilai x dalam julat $-0.5 \leq x \leq 3.2$.

[4 marks]

- c) From the graph, find the value of y when $x = 1.9$
Daripada graf, carikan nilai y apabila $x = 1.9$

[1 mark]

- d) Draw a suitable straight line on your graph to find values of x which satisfy the equation $x^2 - 3x = 0.5$ for $-0.5 \leq x \leq 3.2$. State the values of x .

Lukiskan satu garis lurus yang sesuai pada graf anda untuk mencari semua nilai x yang memuaskan persamaan $x^2 - 3x = 0.5$ bagi nilai x dalam julat $-0.5 \leq x \leq 3.2$. Nyatakan nilai-nilai x itu.

[4 marks]

Shade the region defined by the three inequalities $x^2 - 3x \leq 0.5$, $y \geq 0$
and $x \geq 0$.

Lorekkan rantau yang ditakrifkan oleh tiga ketaksamaan, $x^2 - 3x \leq 0.5$,
 $y \geq 0$, dan $x \geq 0$.

[1 mark]

Answer :

(a)

x	-0.5	0	0.5	1	1.5	2	2.5	3	3.2
y	1.75		3.75		3.75	3	1.75	0	-0.85

Table 2

(b) Refer graph on page 20.

Rujuk graf di halaman 20.

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

(d) Refer graph on page 20.

Rujuk graf di halaman 20.

$x = \dots\dots\dots$

- 14 Data below shows the masses in **kg**, of a group of 40 students from Cempaka class at SK Serikandi.

Data di bawah menunjukkan berat dalam kg, bagi sekumpulan 40 orang murid dari Kelas Cempaka di SK Serikandi.

33	23	35	39	46	54	45	32	34	33
56	38	35	46	47	48	27	36	33	50
21	28	25	48	28	36	29	37	56	43
42	32	58	43	35	38	50	42	34	35

- a) Using the data in Table 3 and class interval of 5 kg, complete the table in the answer space provided.

Dengan menggunakan data dalam Jadual 3 dan dengan menggunakan selang kelas bersaiz 5kg, lengkapkan jadual dalam ruang jawapan yang disediakan.

[4 marks]

- b) Based on table 3, calculate the estimated mean mass of the students.
Berdasarkan jadual 3, hitungkan anggaran min berat bagi murid-murid.

[3 marks]

- c) For this part of the question, use the graph paper provided on page 23.

Untuk bahagian ini, gunakan kertas graf yang disediakan pada halaman 23.

Using a scale of 2 cm to 5 kg on the x-axis and 2 cm to 1 student on the y-axis draw a histogram for the data.

Dengan menggunakan skala 2 cm kepada 5 kg pada paksi-x dan 2 cm kepada 1 murid pada paksi-y. Lukiskan sebuah histogram bagi menggambarkan data tersebut.

[4 marks]

- d) State one information that can be obtained based on the histogram in (c).

Nyatakan satu maklumat yang boleh diperolehi berdasarkan histogram dalam (c).

[1 mark]

Answer :

a)

Class interval <i>Selang kelas</i>	Frequency <i>Kekerapan</i>	Midpoint <i>Titik tengah</i>
20-24	2	22
25-29		

Table 3

b)

c) Refer to the histogram on page 23.
Rujuk histogram di halaman 23.

d)

- 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 8 (i) shows a solid right prism with a square base $ABCD$ on a horizontal table. $ABGMQ$ is the uniform cross-section of the prism. Rectangle $MNFG$ is an inclined planes. Rectangle $MNPQ$ is a horizontal plane. AQ , DP , BG and CF are vertical edges.

Rajah 8(i) menunjukkan sebuah pepejal berbentuk prisma tegak dengan tapak segi empat sama $ABCD$ terletak di atas meja mengufuk. Permukaan $ABGMQ$ ialah keratan rentas seragamnya. Segi empat $MNFG$ ialah satah condong. Segi empat tepat $MNPQ$ ialah satah mengufuk. Tepi AQ , DP , BG dan CF ialah garis tegak

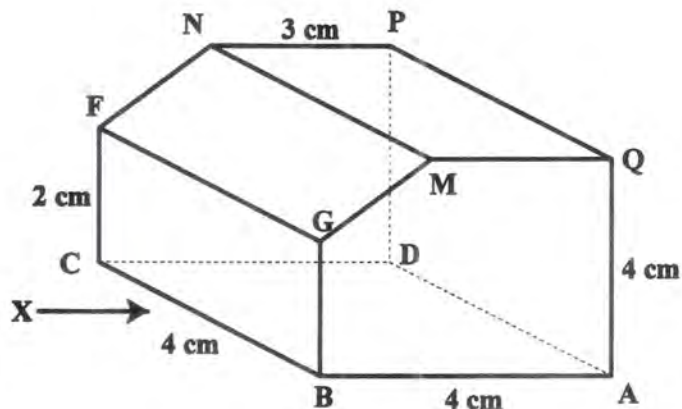


Diagram 8 (i)

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

Lukis dengan skala penuh dongakan pepejal itu pada satah mencancang yang selari dengan BC sebagaimana dilihat dari X .

[3 marks]

- (b) A half cylinder with diameter of 6 cm is joined to the prism in Diagram 8(i) at the horizontal plane MNPQ. The combined solid is as shown in Diagram 8(ii).

Sebuah separuh silinder berdiameter 6 cm di cantumkan kepada prisma dalam Rajah 8(i) pada satah mengufuk MNPQ. Pepejal gabungan itu ditunjukkan dalam Rajah 8(ii).

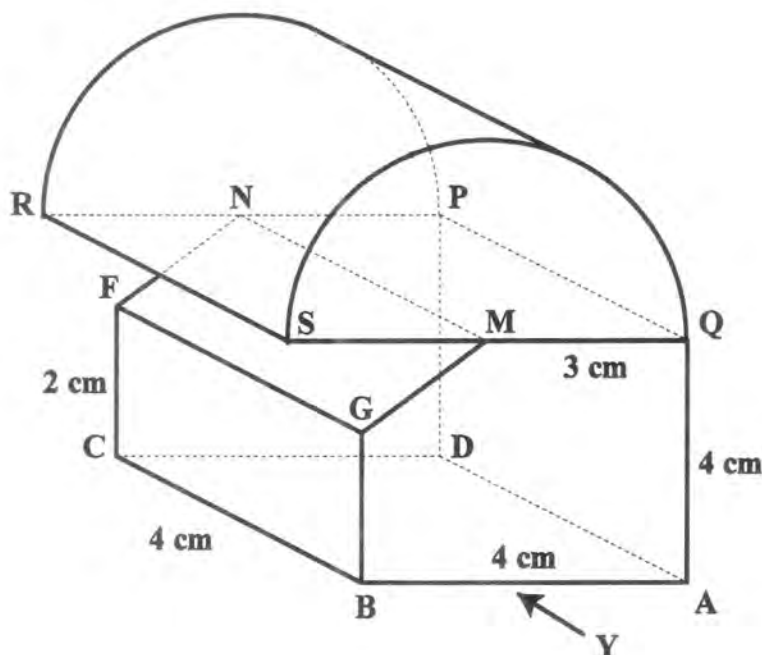


Diagram 8 (ii)

Draw to full scale

Lukis dengan skala penuh

- (i) The plan of the combined solid.

Pelan pepejal gabungan itu.

[5 marks]

- (ii) The elevation of the combined solid on a vertical plane parallel to BC as viewed from Y.

Dongakan pepejal gabungan itu pada satah mencancang yang selari dengan AB sebagaimana dilihat dari Y.

[4 marks]

- 16 $P(35^\circ N, 65^\circ W)$, Q and R are three points on the earth's surface. PR is the diameter of the earth.

$P(35^\circ U, 65^\circ B)$, Q dan R ialah tiga titik pada permukaan bumi. PR ialah diameter bumi.

- a) State the longitude of R .

Nyatakan longitud bagi R .

[1 mark]

- b) PQ is the diameter of the parallel of latitude of $35^\circ N$.

PQ ialah diameter bagi selarian latitud $35^\circ U$.

- (i) State the position of Q .

Nyatakan kedudukan bagi Q .

[2 marks]

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

Hitungkan jarak terpendek dalam batu nautika dari P ke Q diukur sepanjang permukaan bumi.

[2 marks]

- c) An aeroplane took off from P and flew due west to Q along the common parallel of latitude and then flew due south to R along the meridian.

Sebuah kapal terbang berlepas dari P dan terbang ke barat ke Q di sepanjang selarian latitud dan kemudian terbang ke selatan ke R di sepanjang meridian.

Calculate

Hitungkan

- (i) the distance, in nautical miles, from P to Q measured along the common parallel of latitude.

jarak dalam batu nautika dari P ke Q diukur di sepanjang selarian latitud.

[3 marks]

- (ii) the time taken, in hours, for the whole journey if the average speed of the whole journey is 750 knots.

Masa yang diambil, dalam jam, bagi seluruh perjalan kapal terbang itu jika purata laju bagi seluruh perjalanan itu ialah 750 knot.

[4 marks]

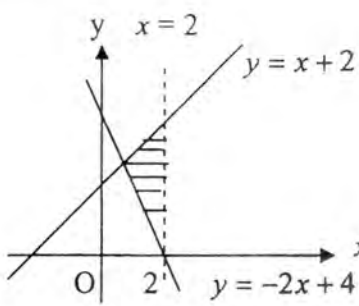
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PEPRIKSAAN PERCUBAAN NEGERI PERAK 2009

PAPER 1 ANSWER

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

SKEMA PEMARKAHAN Maths paper 2 2009
Section A (52 marks)

1	 <p>Line $x = 2$ is drawn correctly. 1</p> <p>Shaded region $y \leq x + 2$ or $y \geq -2x + 4$ or $x < 2$ correctly. 1</p> <p>Shaded the region which satisfies the three inequalities correctly. 1</p>	
2	$3h^2 - 14h - 5 = 0$ $(3h + 1)(h - 5) = 0$ $h = -\frac{1}{3},$ $h = 5$	<p>1</p> <p>1</p> <p>1</p> <p>1</p>
3	<p>(a) $\angle BFC$ or $\angle CFB$</p> <p>(b) $\tan \angle BFC$</p> $= \frac{9}{8}$ $\angle BFC = 48.37^\circ / 48^\circ 22'$	<p>1</p> <p>1</p> <p>1</p> <p>1</p>
4	$m - 6n = 20$ $6m = 12$ $m = 2$ $n = -3$ <p>(Terima kaedah matriks atau kaedah gantian)</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p>
5	<p>(a) $\frac{1}{2}(6 + 10)(r)(12) = 672$ atau setara</p> $r = 7\text{cm}$ <p>(b) $\frac{1}{4}\left(\frac{22}{7}\right)(7^2)(12)$</p>	<p>1</p> <p>1</p> <p>1</p>

	$= 462\text{cm}^3$	1
6	<p>(a) antecedent: A polygon has 5 sides. Consequent: The polygon is a pentagon.</p> <p>(b) If the lines $y = 2x + 6$ and $y = mx + 10$ are parallel, then $m = 2$.</p> <p>(c) $1 + 4n^2$, where $n = 1, 2, 3, \dots$</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p>
7	<p>(a) $A = \{(K, L), (K, M), (K, N)\}$</p> $n(\text{sample space}) = 4 \times 5 = 20$ $P(A) = \left(\frac{1}{4}\right)\left(\frac{3}{5}\right)$ <p>or</p> $P(A) = \frac{n(A)}{n(S)} = \frac{3}{20}$ <p>(b) $B = \{(K, 2), (K, 9), (3, L), (3, M), (3, N), (8, L), (8, M), (8, N), (4, L), (4, M), (4, N)\}$</p> $P(B) = \left(\frac{3}{4}\right)\left(\frac{3}{5}\right) + \left(\frac{2}{5}\right)\left(\frac{1}{4}\right)$ or $P(B) = \frac{11}{20}$	<p>1</p> <p>1</p> <p>1</p> <p>1</p>
8	<p>(a) $\frac{1}{4}(2)\left(\frac{22}{7}\right)(14)$ or $\frac{1}{2}(2)\left(\frac{22}{7}\right)(7)$</p> <p>Perimeter of the whole diagram</p> $= 14 + \frac{1}{4}(2)\left(\frac{22}{7}\right)(14) + \frac{1}{2}(2)\left(\frac{22}{7}\right)(7)$ <p>or $14 + 22 + 22$</p> $= 58\text{cm}$ <p>(b) $\frac{1}{4}\left(\frac{22}{7}\right)(14^2)$ or $\frac{120}{360}\left(\frac{22}{7}\right)(7^2)$</p> <p>Area of the shaded region</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p>

	$= \frac{1}{4} \left(\frac{22}{7} \right) (14^2) - \frac{120}{360} \left(\frac{22}{7} \right) (7^2) \text{ or}$ $154 - 51 \frac{1}{3}$ $= 102 \frac{2}{3} \text{ cm}^3$	1 1
9	<p>(a) $\frac{250 \text{ km}}{6 \text{ h}}$ $41 \frac{2}{3} \text{ kmh}^{-1}$</p> <p>(b) uniform speed = $\frac{250}{5} = 50 \text{ kmh}^{-1}$ $\frac{250 - 150}{t} = 50$ $t = 2$</p>	1 1 1 1 1
10	<p>(a) x-intercept = -3</p> <p>(b) $\frac{2+2}{3-k} = -2$ $k = 5$</p> <p>(c) m = 2</p>	1 1 1 1

	$y = 2x - 4$ <p style="text-align: right;"><i>papercollection</i></p>	1
11	<p>(a) $r = -\frac{5}{2}$</p> <p>(b) $G^{-1} = -\frac{1}{2} \begin{pmatrix} -2 & 2 \\ -4 & 5 \end{pmatrix}$ $= \begin{pmatrix} 1 & -1 \\ 2 & -\frac{5}{2} \end{pmatrix}$</p> <p>(c) $\begin{pmatrix} v \\ w \end{pmatrix} = -\frac{1}{2} \begin{pmatrix} -2 & 2 \\ -4 & 5 \end{pmatrix} \begin{pmatrix} 1 \\ 2 \end{pmatrix}$ $= \begin{pmatrix} -1 \\ -3 \end{pmatrix}$ $v = -1,$ $w = -3$</p>	1 1 1 1 1 1

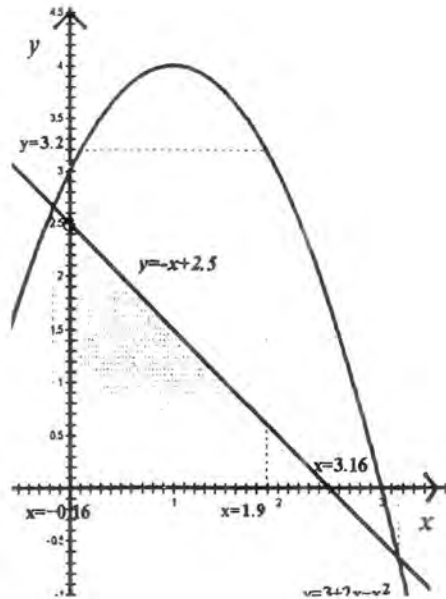
13) a)

x	0	1
y	3	4

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-----1, 1

b)



- Axes are drawn in the right directions with uniform scales in the domain $-0.5 \leq x \leq 3.2$ and $-0.85 \leq y \leq 4$

-----1

* plot 9 points correctly

-----2

(note: plot 8 or 7 points correctly, 1 mark)

* Smooth, continuous curve and passing through all the 9 points.

-----1

c) $3.10 \leq y \leq 3.3$

-----1

d) $y = -x + 2.5$

-----1

Graf $y = -x + 2.5$ drawn at the right position on the graph

-----1

Based on the graph, $3.10 \leq x \leq 3.20$

-----1

$-0.20 \leq x \leq -0.10$

-----1

e) Refer to the shaded region above.

-----1

12

14 (a)

Class interval <i>Selang kelas</i>	Frequency <i>Kekerapan</i>	Midpoint <i>Titik tengah</i>
20-24	2	22
25-29	5	27
30-34	7	32
35-39	10	37
40-44	4	42
45-49	6	47
50-54	3	52
55-59	3	57

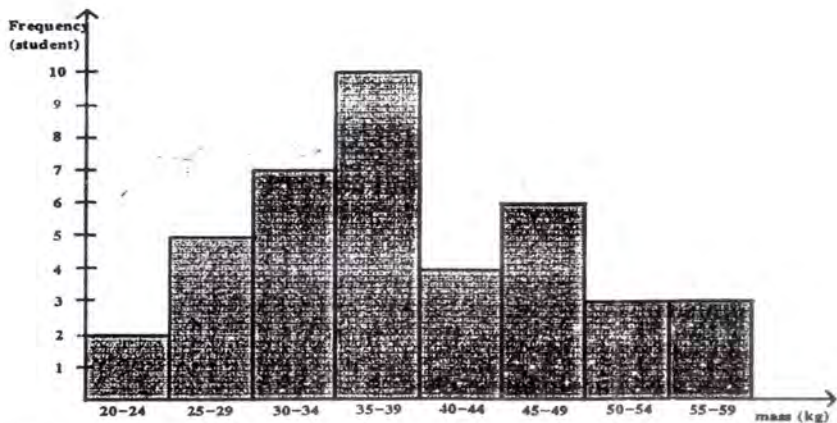
- All class intervals correct -----1
- All 8 frequencies correct -----2
- (note : 7 or 6 frequencies correct , 1 mark)
- All midpoints correct -----1

b)
$$\text{mean} = \frac{2(22) + 5(27) + 7(32) + 10(37) + 4(42) + 6(47) + 3(52) + 3(57)}{40}$$
 -----1

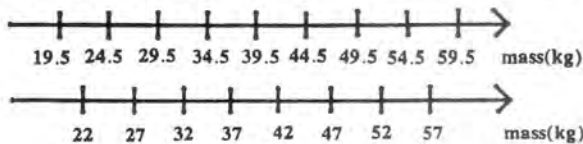
$$= \frac{1550}{40}$$
 -----1

$$= 38.75 \text{ kg}$$
 -----1

c) Histogram:



- * Vertical axis is marked uniformly in the range $0 \leq y \leq 10$. -----1
- * Horizontal axis represent the class intervals or class boundary or mid points -----1



- *All 8 rectangles of similar width are correctly constructed -----2

d) Modal class is (35-39) kg -----1

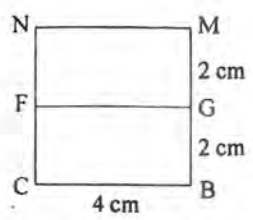
15 (a)

Elevation X:

The shape must be right with the square and rectangles. All lines must be fully drawn.

papercollection

3

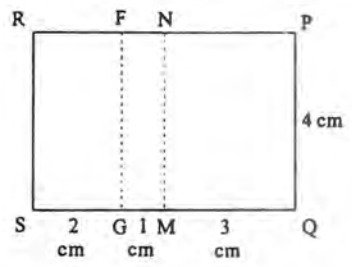


Measurement must be accurate to ± 0.2 cm and all angles at rectangle vertex = $90^\circ \pm 1$

b (i)

Plan:

The shape must be right with the rectangles. All lines included the dotted lines must be shown completely.



5

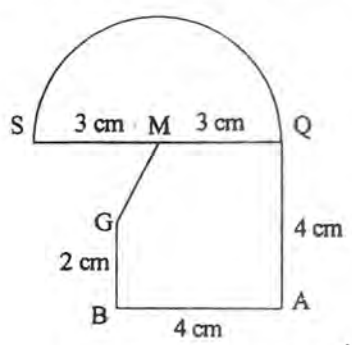
Measurement must be accurate to ± 0.2 cm and all angles at rectangle vertex = $90^\circ \pm 1$

b (ii)

Elevation Y:

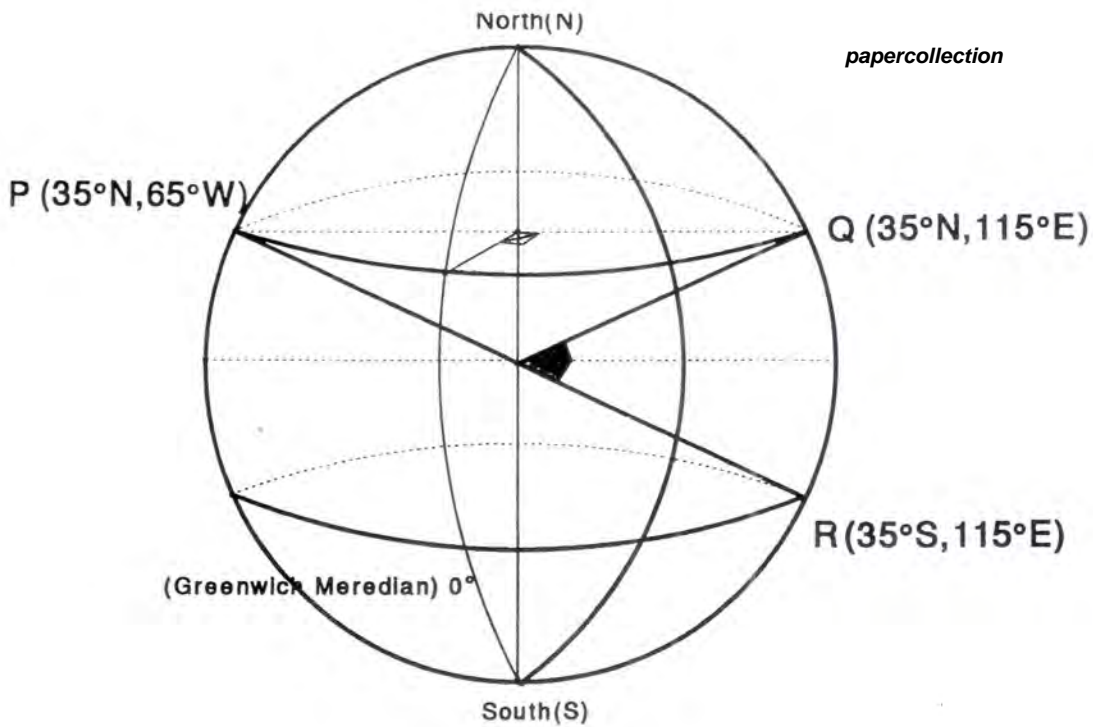
The shape must be right included with the semi circle. All lines must be fully drawn.

4



Measurement must be accurate to ± 0.2 cm and all angles at rectangle vertex = $90^\circ \pm 1$

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- a) 115°E ———(1)
- b) (i) Q (35°N, 115°E) ———(2)
- (ii) Shortest distance of PQ
 $= 110^\circ \times 60$ ———(1)
 $= 6600 \text{ n.m}$ ———(1)
- c) (i) Distance PQ = $180^\circ \times 60 \times \cos 35^\circ$ ———(1)
 $= 8846.84 \text{ n.m}$ ———(1)
- (ii) The whole distance = $8846.84 + (70 \times 60)$ ———(1)
 $= 13046.84$ ———(2)
- Time taken = $\frac{13046.84 \text{ n.m}}{750 \text{ knots}}$ ———(1)
 $= 17.40 \text{ hours}$ ———(1)
-
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