

1449/1
Mathematics
Paper 1
2009



JABATAN PELAJARAN MELAKA

PEPERIKSAAN AKHIR TAHUN
TINGKATAN EMPAT 2009

MATHEMATICS

Paper 1

One hour and fifteen minutes

DO NOT OPEN THIS QUESTION PAPER UNTIL YOU ARE TOLD TO DO SO
JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

1. This question paper is bilingual.
Kertas soalan ini adalah dalam dwibahasa.
2. Answer **all** questions.
*Jawab **semua** soalan.*
3. Each question is followed by four choices of answers **A, B, C** and **D**.
*Setiap soalan diikuti dengan empat pilihan jawapan **A, B, C** dan **D**.*
4. For each question choose **one** answer only.
*Setiap soalan pilih hanya **satu** jawapan sahaja.*
5. The diagrams given are not according to scale unless stated.
Gambar rajah yang ditunjukkan tidak mengikut skala sebenar kecuali dinyatakan.
6. A list of formulae is given on pages 2 and 3.
Senarai rumus diberi di mukasurat 2 dan 3.
7. Non programmable scientific calculator is allowed.
Kalkulator saintifik yang tidak boleh diprogramkan adalah dibenarkan.

This question paper consist of 18 printed pages

Kertas soalan ini mengandungi 18 halaman bercetak.

MATHEMATICAL FORMULAE

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

RELATIONS

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

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

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

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

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

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

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

8 Midpoint ,

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

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

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

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

12 Pythagoras Theorem

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

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

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

SHAPES AND SPACE

- 1 Area of trapezium = $\frac{1}{2} \times \text{sum of parallel sides} \times \text{height}$
- 2 Circumference of circle = $\pi d = 2\pi r$
- 3 Area of circle = πr^2
- 4 Curved surface area of cylinder = $2\pi r h$
- 5 Surface area of sphere = $4\pi r^2$
- 6 Volume of right prism = cross sectional area \times length
- 7 Volume of cylinder = $\pi r^2 h$
- 8 Volume of cone = $\frac{1}{3} \pi r^2 h$
- 9 Volume of sphere = $\frac{4}{3} \pi r^3$
- 10 Volume of right pyramid = $\frac{1}{3} \times \text{base area} \times \text{height}$
- 11 Sum of interior angles of a polygon = $(n - 2) \times 180^\circ$
- 12
$$\frac{\text{arc length}}{\text{circumference of circle}} = \frac{\text{angle subtended at center}}{360^\circ}$$
- 13
$$\frac{\text{area of sector}}{\text{area of circle}} = \frac{\text{angle subtended at centre}}{360^\circ}$$
- 14 Scale factor, $k = \frac{PA'}{PA}$
- 15 Area of image = $k^2 \times \text{area of object}$

Answer **all** questions.
Jawab semua soalan.

1. Express 49700 in standard form.
Ungkapkan 49700 dalam bentuk piawai.
A 4.97×10^4
B 4.97×10^2
C 4.97×10^{-4}
D 4.97×10^{-2}

2. Round off 0.00687 correct to two significant figures.
Bundarkan 0.00687 betul kepada dua angka bererti.
A 0.01
B 0.07
C 0.0068
D 0.0069

3. $\frac{0.0012}{8000000} =$
A 1.5×10^3
B 1.5×10^6
C 1.5×10^{-6}
D 1.5×10^{-10}

4. $4.11 \times 10^{-7} + 3.5 \times 10^{-8}$
A 4.46×10^{-7}
B 4.46×10^{-8}
C 7.61×10^{-7}
D 7.61×10^{-8}

5. The area of a rectangular land is 9.6 km^2 . Its width is 8000m.
Find length of the land in m
Diberi keluasan tanah 9.6 km^2 . Lebarnya adalah 8000m. Cari panjangnya dalam m
A 7.68×10^4
B 1.2×10^4
C 1.2×10^3
D 1.2×10^2

6. Factorise $x^3 - 36x$ completely.

Faktorkan $x^3 - 36x$ selengkapnya.

- A. $x(x^2 - 36)$
 - B. $x(x - 6)(x + 6)$
 - C. $x(x - 6)(x - 6)$
 - D. $6x(6 - x^2)$
7. Diagram 1 shows a regular pentagon ABCDE and DFG is an equilateral triangle. Given that BFC is a straight line.

Rajah 1 menunjukkan pentagon sekata ABCDE dan DFG adalah segitiga sama sisi. Diberi BFC adalah garis lurus.

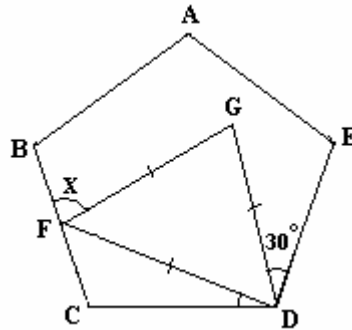


Diagram 1/Rajah 1

Find the value of x.

Cari nilai x.

- A. 48°
 - B. 66°
 - C. 55°
 - D. 70°
8. In Diagram 2, LMN is tangent to the circle with the center O at M and NPQ is a straight line.

Dalam Rajah 2, LMN adalah tangen kepada bulatan berpusat O di M dan NPQ adalah garis lurus.

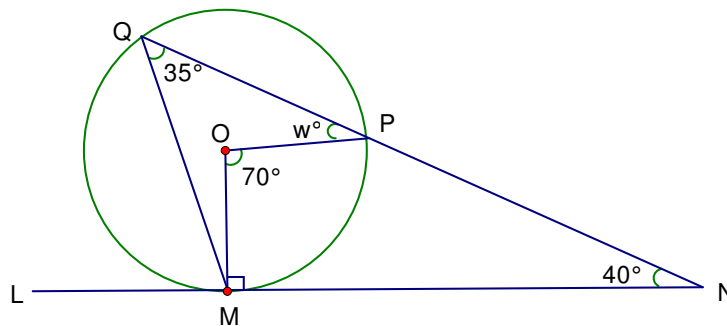


Diagram 2/Rajah 2

Find the value of w .

Cari nilai w .

- A. 5°
 - B. 15°
 - C. 20°
 - D. 45°
9. In the Diagram 3, pentagon P is the image of pentagon Q under anticlockwise rotation of 90° . Which of the points A,B,C and D is the centre of rotation?
 Dalam Rajah 3, pentagon P adalah imej bagi pentagon Q di bawah suatu putaran 90° lawan arah jam. Di antara titik A,B, C dan D manakah pusat putaran?

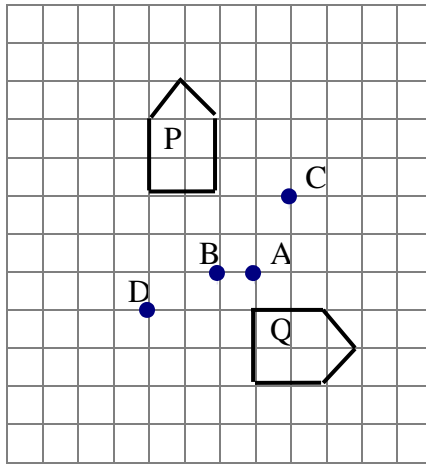


Diagram 3/Rajah 3

10.

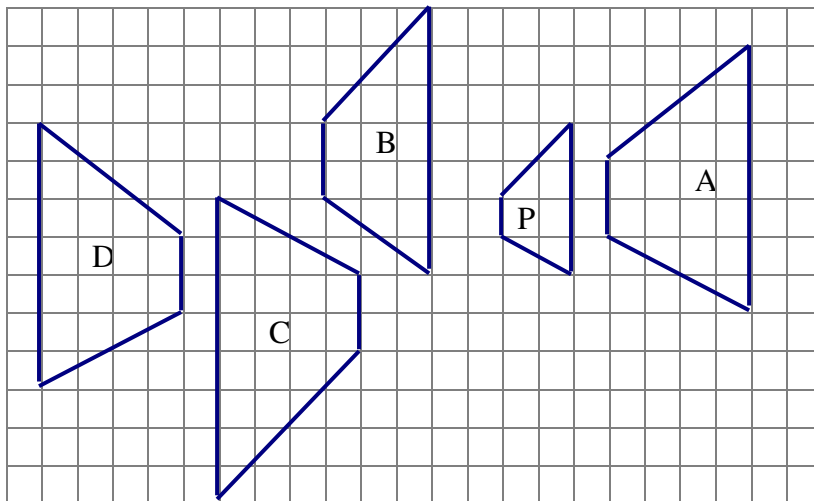


Diagram 4/ Rajah 4

In Diagram 4, which of the quadrilaterals A,B,C and D, is the image of quadrilateral P under an enlargement?

Dalam Rajah 4, antara sisiempat A, B, C dan D yang manakah imej bagi sisiempat P di bawah suatu pembesaran.

- 13 Given $\tan y^\circ = -1.486$ and $180^\circ \leq y \leq 360^\circ$. What are the possible values of y ?
Diberi $\tan y^\circ = -1.486$ dan $180^\circ \leq y \leq 360^\circ$. Apakah nilai yang mungkin bagi y ?

- A $213^\circ 51'$
 B $236^\circ 4'$
 C $303^\circ 56'$
 D $326^\circ 4'$

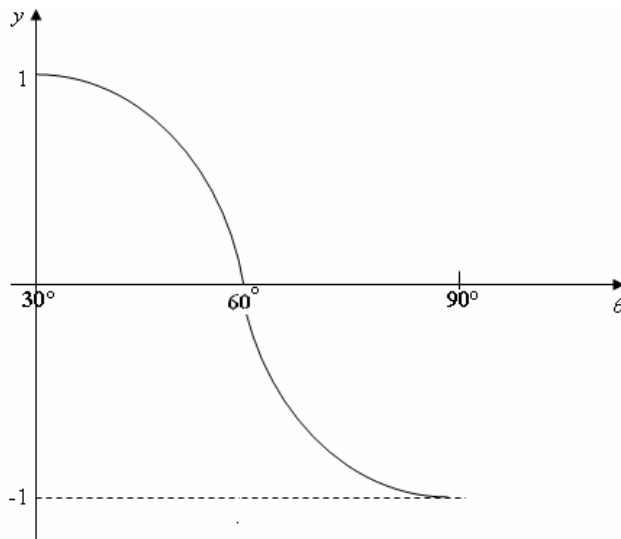


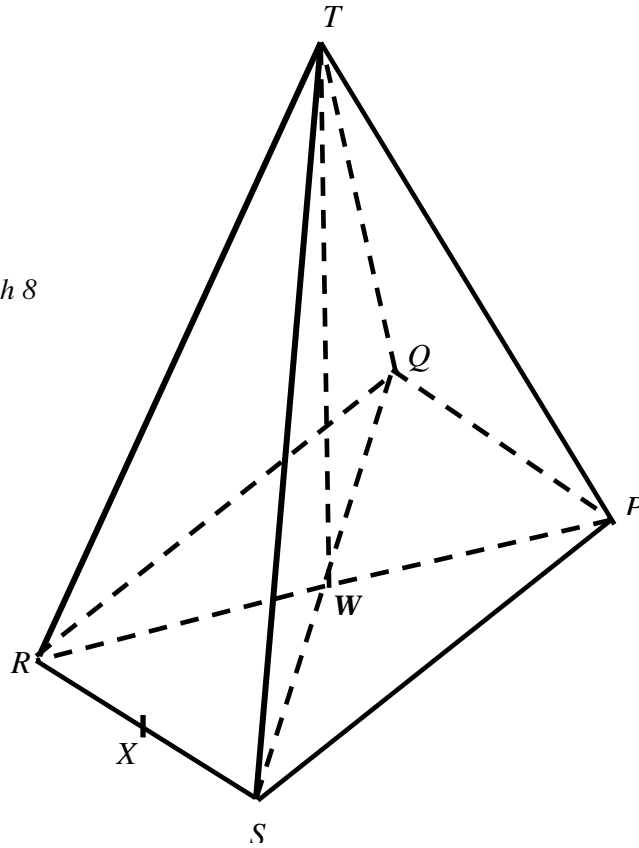
Diagram 7/Rajah 7

- 14 Diagram 7, shows a graph of a trigonometric function. The function is
Rajah 7 menunjukkan graf bagi fungsi trigonometri. Fungsi itu adalah

- A $y = \sin 3\theta$
 B $y = \sin 2\theta$
 C $y = \sin \theta$
 D $y = 3 \sin \theta$

- 15 Diagram 8 shows a right pyramid. The rectangle PQRS is the base of the pyramid.
Rajah 8 menunjukkan piramid tegak segiempat PQRS adalah tapak piramid tersebut.

Diagram 8/Rajah 8



X is the midpoint of RS. The angle between the plane TQW and the plane TRW is
X adalah titik tengah RS. Sudut di antara satah TQW dan satah TRW ialah

- A $\angle RQW$
 B $\angle QTR$
 C $\angle QRW$
 D $\angle QWR$

- 16 Diagram 9, shows a cuboid with horizontal base $PQRS$.
Rajah 9 menunjukkan kuboid dengan tapak mendatar $PQRS$.

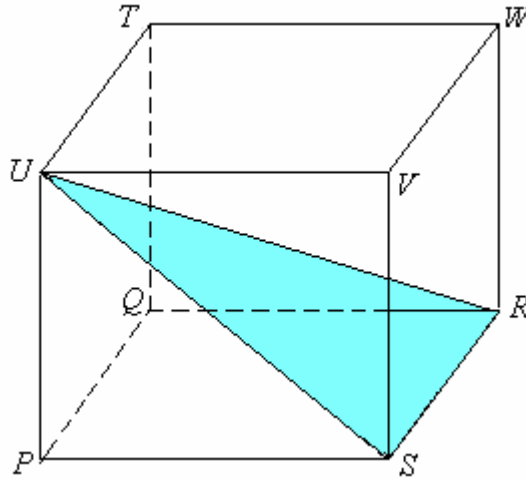


Diagram 9/Rajah 9

- Name the angle between the line UV and the plane URS .
Namakan sudut di antara garis UV dan satah URS .
- A $\angle RUV$
B $\angle SUV$
C $\angle RUS$
D $\angle VSU$
- 17 In Diagram 10, PL and QK are two vertical poles on a horizontal plane KLM .
Given $KL = 6\text{m}$, $KM = 10\text{m}$ and $PM = 17\text{m}$.
Dalam Rajah 10, PL dan QK adalah dua garis tegak dan satah mendatar KLM . Diberi $KL = 6\text{m}$, $KM = 10\text{m}$ dan $PM = 17\text{m}$.

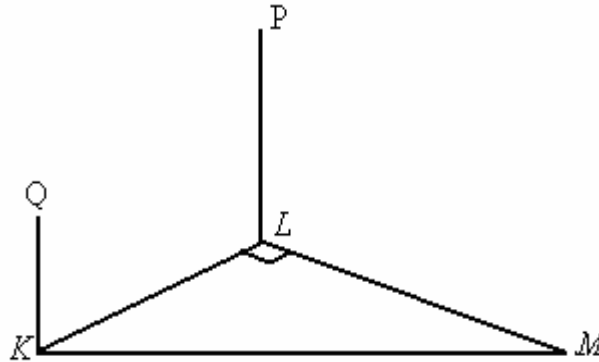


Diagram 10/Rajah 10

The angle of elevation of P from Q if $PL = 5QK$
Sudut dongak P dari Q jika $PL = 5QK$.

- A $21^\circ 48'$
B $26^\circ 24'$
C $63^\circ 26'$
D $68^\circ 12'$

- 18 The angle of depression from a satellite dish on top of a building to an observer at a parking lot is 58° . If the height of the building is 42m, find the horizontal distance of the observer from the leg of the building.

Sudut tunduk dari piring satelit di atas sebuah bangunan kepada pemerhati tempat letak kereta ialah 58° . Jika tinggi bangunan itu 42m, cari jarak mengufuk pemerhati dari kaki bangunan tersebut.

- A 26.24 m
- B 49.53 m
- C 67.21 m
- D 79.26 m

19 $6x(2x-3y) - 8x^2$

- A $4x^2 - 18xy$
- B $4x^2 - 3y$
- C $4x^2 - 18y$
- D $20x^2 - 18xy$

- 20 Simplify $\frac{3}{4n} - \frac{2-n}{8n^2}$ as a single fraction in its simplest form.

Permudahkan $\frac{3}{4n} - \frac{2-n}{8n^2}$ sebagai pecahan tunggal dalam bentuk termudah.

- A $\frac{2-7n}{8n^2}$
- B $\frac{n-1}{8n}$
- C $\frac{7n-2}{8n^2}$
- D $\frac{5n-2}{8n^2}$

21. Given that $\frac{8m-2n}{3} = mn+n$, express m in the terms of n.

Diberi $\frac{8m-2n}{3} = mn+n$, ungkapkan m dalam sebutan n.

- A $m = \frac{n}{8-3n}$
- B $m = \frac{n}{3n-8}$
- C $m = \frac{5n}{3n-8}$
- D $m = \frac{5n}{8-3n}$

21. Given that $\frac{x+1}{5} = 2x-1$, find the value of x

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

A $\frac{2}{9}$

C $\frac{5}{9}$

B $\frac{4}{11}$

D $\frac{2}{3}$

22. Simplify $\frac{(m^2n^4)^{-1}}{m^{-4}n^3}$.

Permudahkan $\frac{(m^2n^4)^{-1}}{m^{-4}n^3}$

A $m^{-2}n^7$

C $m^{-6}n^{-1}$

B m^2n^{-7}

D m^6n

23. List all the integer values of k which satisfy both the inequalities $3k < 7$ and $5 - 2k \leq 9$.

Senaraikan semua integer x yang memuaskan ketaksamaan $3k < 7$ dan $5 - 2k \leq 9$.

A -1, 0, 1

B -1, 0, 1, 2

C -2, -1, 0, 1

D -2, -1, 0, 1, 2

25. Diagram 11 is a pie chart showing the amount spent on five types of fruits by a family on a particular month. The total spent on these fruits is RM200. The amount spent on oranges is RM30.

Rajah 11 adalah carta pai yang menunjukkan perbelanjaan untuk lima jenis buah-buahan bagi sebuah keluarga pada bulan tertentu. Jumlah perbelanjaan bagi buah-buahan tersebut ialah RM200. Perbelanjaan untuk buah oren adalah RM30.

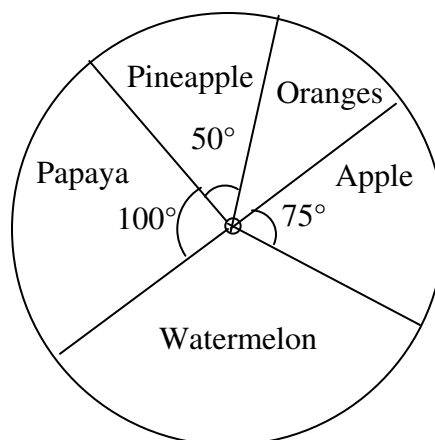


Diagram 11/Rajah 11

Find the ratio of the amount spent on oranges to the amount spent on watermelons.

Cari nisbah perbelanjaan buah oren kepada buah tembikai.

- A. 1 : 2
- B. 2 : 3
- C. 3 : 5
- D. 5 : 8

26. Which of the following statements are true?

Antara berikut yang manakah adalah pernyataan yang benar?

- I $14 + 16 = 29$
- II $16 + 11 = 27$
- III 15 subtracted by 7 is 8.

- A I and II only
- B II and III only
- C I and III only
- D I, II and III

27. Diagram 12 is an incomplete bar chart representing the number of children in a group of families in a housing area . The bar representing the families that have four childrens is not shown .

Rajah 12 ialah sebuah carta palang yang tidak lengkap mewakili bilangan anak dalam keluarga di suatu kawasan perumahan . Palang yang mewakili keluarga yang mempunyai empat orang anak tidak ditunjukkan .

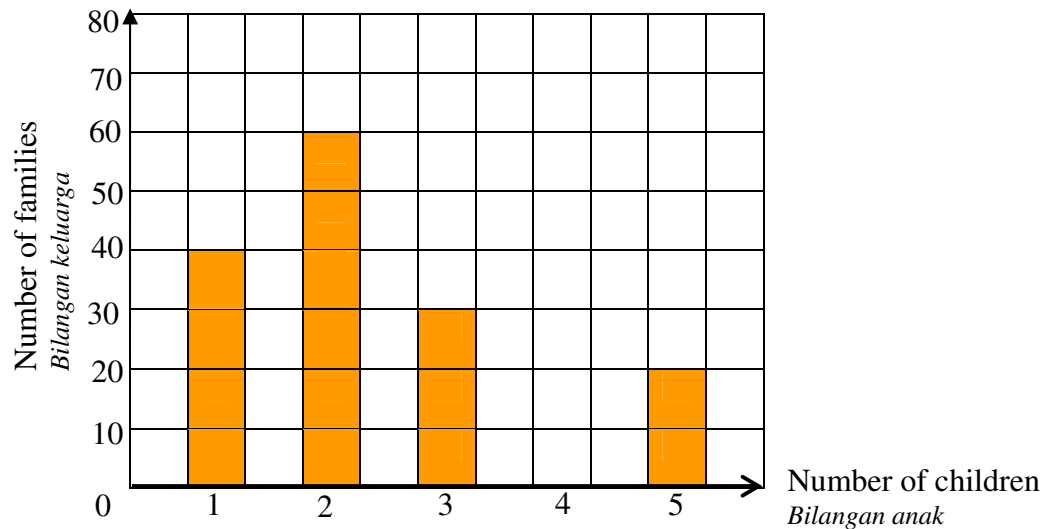


Diagram 12/ Rajah 12

It is given that the total number of families in the housing area is 200 .

Find the percentage of families that have four children .

Diberi bahawa jumlah bilangan keluarga di kawasan perumahan itu ialah 200 orang .

Cari peratusan keluarga yang mempunyai empat orang anak .

- A 25
- B 40
- C 75
- D 90

28. Table 1 shows the score obtained by a group of students in a contest.
Jadual 1 menunjukkan skor yang diperolehi oleh sekumpulan pelajar dalam satu pertandingan.

Score	0	1	2	3	4
Number of students	3	3	4	m	3

Table 1

Given that the mean score is 2.2, find the value of m .

Diberi bahawa skor min ialah 2.2, carikan nilai bagi m .

- A 2
 B 3
 C 5
 D 7
29. Diagram 13 shows a Venn diagram with the number of elements in the universal set ξ , set X and set Y .
Rajah 13 menunjukkan gambar rajah Venn bagi bilangan unsur dalam set X dan set Y dengan keadaan ξ ialah set semesta

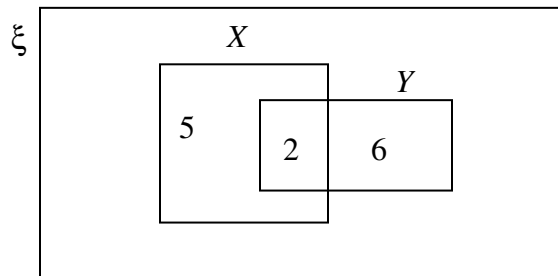


Diagram 13/ Rajah 13

Given that, $n(\xi) = 21$, the value of $n(X' \cap Y')$ is

Diberi bahawa $n(\xi) = 21$, nilai bagi $n(X' \cap Y')$ ialah

- A 8
 B 10
 C 11
 D 13
30. Diagram 14 shows a Venn diagram and the universal set $\xi = E \cup F \cup G$.
Rajah 14 menunjukkan gambar rajah Venn dan set semesta $\xi = E \cup F \cup G$.

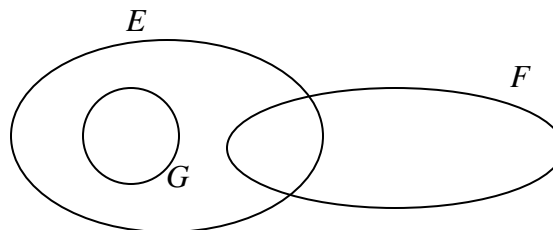
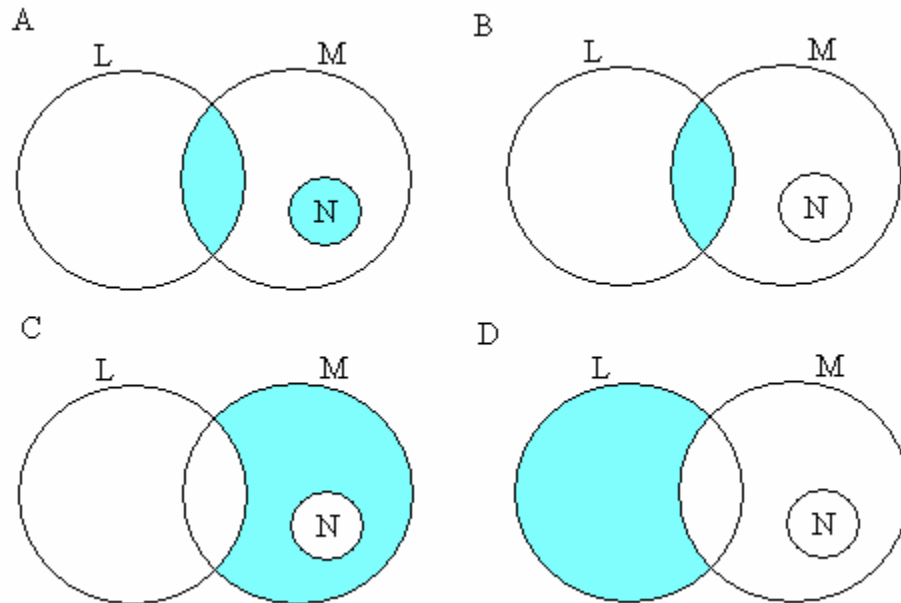


Diagram 14/Rajah 14

All the relations between sets E, F and G are true **except**
*Semua hubungan antara set E, F dan G adalah benar **kecuali***

- A $G \subset E$
- B $E \cup G = E$
- C $E \cap G = E$
- D $E \cap F \neq \emptyset$

31 Which of the following Venn diagram represent $L \cap M \cup N$?
Gambarajah Venn yang manakah mewakili $L \cap M \cup N$?



32. Diagram 15, Venn diagram shows the elements in set P, Q and R . It is given that the universal set $\xi = P \cup Q \cup R$. Find $n(P \cap Q' \cap R)$
Rajah 15, gambarajah Venn menunjukkan unsur bagi set P, Q dan R . Diberi set $\xi = P \cup Q \cup R$. Cari $n(P \cap Q' \cap R)$

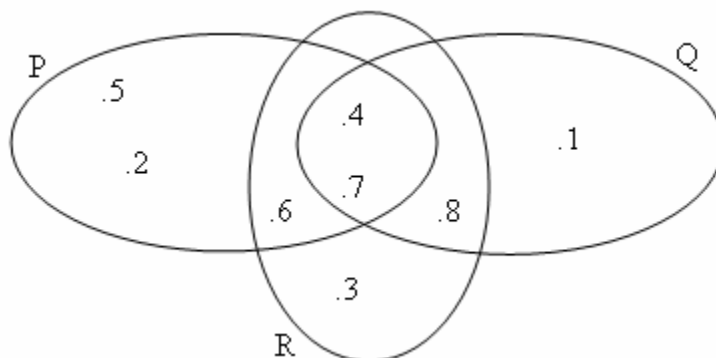


Diagram 15/Rajah 15

- A 6
- B 2
- C 1
- D 5

- 33 Find the x-intercept of the straight line $4y = 2x - 16$
Cari pintasan x untuk garis lurus $4y = 2x - 16$
- A** 8
B - 8
C - 4
D 4

34.

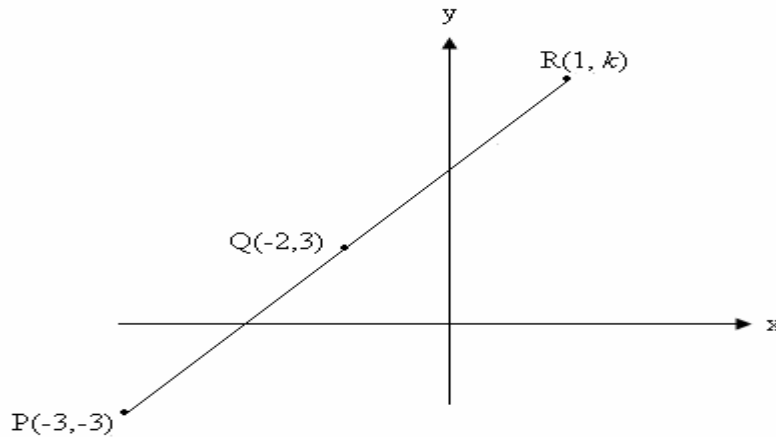


Diagram 16/Rajah 16

- In Diagram 16, PQR is a straight line. Find the value of k
Dalam Rajah 16, PQR adalah garis lurus. Cari nilai bagi k
- A** 6
B 3
C 9
D 21
35. There are 35 blue balls and x red balls in a box. If a ball is randomly selected from the box, the probability of a red ball being selected is $\frac{3}{8}$. Find the value of x .
Dalam sebuah kotak terdapat 35 biji bola biru dan x biji bola merah. Jika sebiji bola dipilih secara rawak dari kotak, kebarangkalian bola merah dipilih ialah $\frac{3}{8}$. Cari nilai x
- A** 9
B 10
C 13
D 21

- 36 There are 40 pencils in a box where 20 of them are red pencils and the rest are black pencils or yellow pencils. If the pencil is selected at random from the box, the probability of selecting a black pencil is $\frac{3}{10}$. Find the probability that a yellow pencil is selected

Dalam sebuah kotak terdapat 40 batang pensil di mana 20 batang adalah pensil berwarna merah dan selebihnya pensil berwarna hitam atau kuning. Jika sebatang pensil dipilih secara rawak, kebarangkalian memilih pensil berwarna hitam ialah $\frac{3}{10}$. Cari kebarangkalian pensil berwarna kuning terpilih

A $\frac{1}{5}$

C $\frac{3}{5}$

B $\frac{2}{5}$

D $\frac{7}{10}$

- 37 Find the mean of the following data
Cari min bagi data di bawah

6, 11, 13, 5, 7, 9, 10, 6, 5

A 7

B 8

C 7.6

D 6.5

- 38 Given $B = \{1, 2, 3, 6\}$, find the number of subsets of B
Di beri $B = \{1, 2, 3, 6\}$, cari bilangan bagi subset B

A 8

B 16

C 32

D 64

39

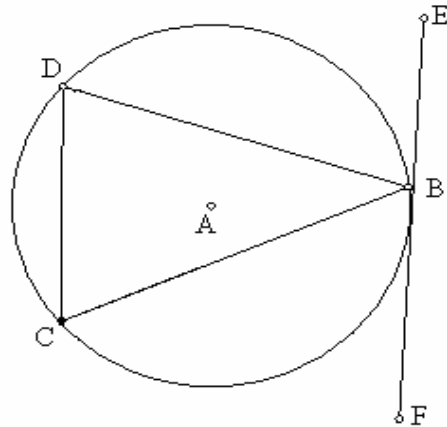


Diagram 17/ Rajah 17

In the diagram 17, FBE is a tangent to the circle with centre A . Given that $\angle DCB = 55^\circ$ and $\angle BDC = 35^\circ$. Find the value of $\angle CBF$.

Dalam Rajah 17, FBE ialah tangent kepada bulatan berpusat di A . Di beri $\angle DCB = 55^\circ$ dan $\angle BDC = 35^\circ$. Cari nilai bagi $\angle CBF$.

- A 35°
- B 40°
- C 50°
- D 55°

40 Diagram 18 shows a cuboid with the horizontal base $PQRS$.
Rajah 18 menunjukkan kuboid dengan tapak mengufuk $PQRS$

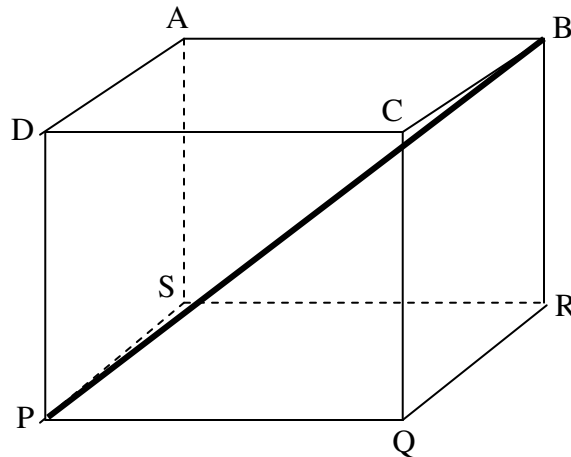


Diagram 18/ Rajah 18

Write the angle between the line PB and the plane $ABCD$
Namakan sudut di antara garis PB dengan satah $ABCD$

- A $\angle BPR$
- B $\angle BPD$
- C $\angle DBP$
- D $\angle PBA$

END OF QUESTION PAPER
KERTAS SOALAN TAMAT



JABATAN PELAJARAN MELAKA

**PEPERIKSAAN AKHIR TAHUN
TINGKATAN EMPAT 2009**

MARKING SCHEME

**MATHEMATICS
PAPER 1 1449/1**

PEPERIKSAAN AKHIR TAHUN 2009

**MATHEMATICS
PAPER 1 1449/1**

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

SULIT

1449/2

1449/2
Mathematics
Paper 2
OCT 2009

Name :

Form :



JABATAN PELAJARAN MELAKA

**PEPERIKSAAN AKHIR TAHUN
TINGKATAN 4 2009**

MATHEMATICS

Paper 2

Two hour and thirty minutes

**DO NOT OPEN THIS QUESTION PAPER UNTIL YOU ARE
TOLD TO DO SO
JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU**

- This question paper consist of two section: **Section A and Section B.** Answer all question in **Section A and Section B.**
Kertas soalan ini mengandungi dua bahagian. **Bahagian A dan Bahagian B.** Jawab semua soalan dalam **Bahagian A dan Bahagian B.***
- This question paper is bilingual.
Kertas soalan ini dalam dwibahasa.*
- Write your answers in the spaces provided in the question paper.
Jawapan hendaklah ditulis dalam ruang yang disediakan dalam kertas soalan.*
- Working step must be written clearly.
Jalan kerja mesti ditunjukkan dengan jelas.*
- Diagrams given are not according to scale unless stated.
Rajah yang mengiringi soalan tidak dilukiskan mengikut skala kecuali dinyatakan.*
- Marks for each question are given in bracket.
Markah setiap soalan diberikan dalam kurungan.*
- A list of formulae is given in pages 2 and 3.
Senarai formula diberi di muka surat 2 dan 3.*
- Non programmable scientific calculator are allowed.
Penggunaan kalkulator saintifik yang tidak boleh diprogramkan adalah dibenarkan.*
- This question paper must be hand up at the end of the exam.
Kertas soalan ini hendaklah diserahkan di akhir peperiksaan.*

Section	Question	Full Marks	Mark Obtain
A	1	3	
	2	4	
	3	4	
	4	4	
	5	4	
	6	5	
	7	5	
	8	6	
	9	5	
	10	7	
	11	5	
B	12	12	
	13	12	
	14	12	
	15	12	
Total			

This question paper consist of 22printed paper

MATHEMATICAL FORMULAE

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

RELATIONS

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

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

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

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

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

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

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

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

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

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

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

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

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

14 $m = -\frac{y - \text{int ercept}}{x - \text{int ercept}}$

SHAPES AND SPACE

- 1 Area of trapezium = $\frac{1}{2} \times \text{sum of parallel sides} \times \text{height}$
- 2 Circumference of circle = $\pi d = 2\pi r$
- 3 Area of circle = πr^2
- 4 Curved surface area of cylinder = $2\pi r h$
- 5 Surface area of sphere = $4\pi r^2$
- 6 Volume of right prism = cross sectional area \times length
- 7 Volume of cylinder = $\pi r^2 h$
- 8 Volume of cone = $\frac{1}{3} \pi r^2 h$
- 9 Volume of sphere = $\frac{4}{3} \pi r^3$
- 10 Volume of right pyramid = $\frac{1}{3} \times \text{base area} \times \text{height}$
- 11 Sum of interior angles of a polygon = $(n - 2) \times 180^\circ$
- 12
$$\frac{\text{arc length}}{\text{circumference of circle}} = \frac{\text{angle subtended at center}}{360^\circ}$$
- 13
$$\frac{\text{area of sector}}{\text{area of circle}} = \frac{\text{angle subtended at centre}}{360^\circ}$$
- 14 Scale factor, $k = \frac{PA'}{PA}$
- 15 Area of image = $k^2 \times \text{area of object}$

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

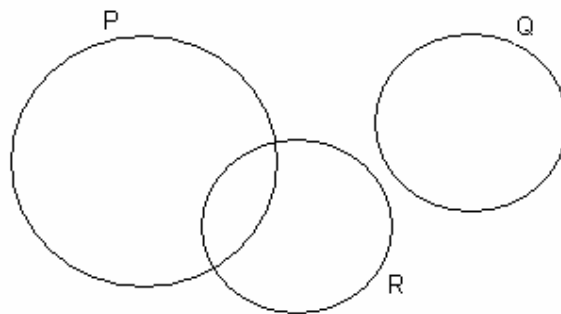
Answer **all** questions in this section.
 Jawab **semua** soalan dalam bahagian ini.

1. The Venn diagram in the answer space shows set P, set Q and set R. Given $\xi = P \cup Q \cup R$. On the diagrams provided, shade
 Gambar rajah Venn di ruang jawapan menunjukkan set P, set Q dan set R.. Diberi $\xi = P \cup Q \cup R$. Pada rajah di ruang jawapan, lorekkan

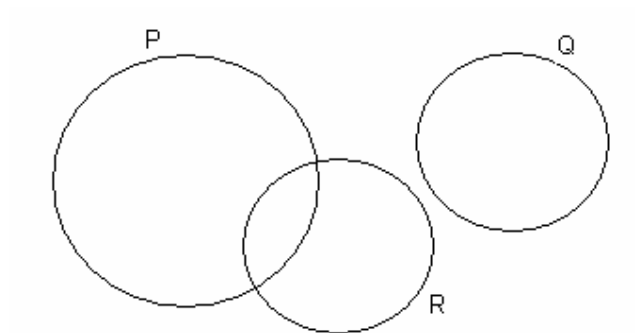
[3 marks]
 [3 markah]

Answer:/ Jawaban:

(a) $P \cap R'$



(b) $(P \cap R) \cup Q$



2.

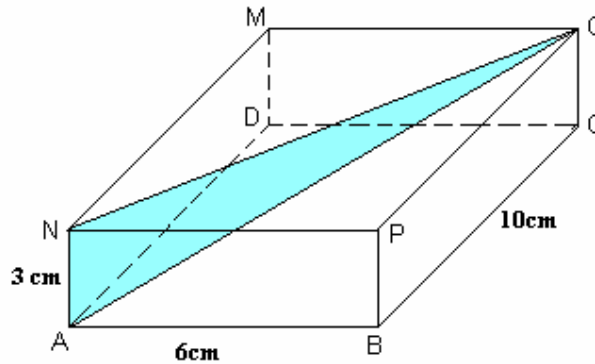


Diagram 1

Rajah 1

Diagram 1 shows the cuboid with the horizontal base ABCD.

Identify and calculate the angle between the plane ANO and the plane ADMN.

Rajah 1 menunjukkan sebuah kuboid dengan tapak mendatar ABCD.

Kenalpasti dan hitungkan sudut di antara satah ANO dan satah ADMN.

[4 marks]

[4 markah]

Answer:/ *Jawapan:*

- 3 Solve the quadratic equation $2x^2 = 2 - 3(3x + 2)$
Selesaikan persamaan kuadratik $2x^2 = 2 - 3(3x + 2)$

[4 marks]

[4 markah]

Answer:/ *Jawapan:*

- 4 Calculate the values of m and of p that satisfy the following simultaneous linear equations:

Hitungkan nilai m dan nilai p yang memuaskan persamaan linear serentak berikut :

[4 marks]

[4 markah]

$$m - 6p = 10$$

$$3m + 4p = 8$$

Answer:/ Jawaban:

5. Diagram 2 shows a solid cylinder with radius 10cm and height 15cm. A cone with radius 2.5 cm and height 10 cm is taken out of the solid.

Rajah 2 menunjukkan sebuah silinder dengan jejari 10cm dan tinggi 15cm. Sebuah kon.berjejari 2.5 cm dan tinggi 10cm dikeluarkan daripada pepejal itu..

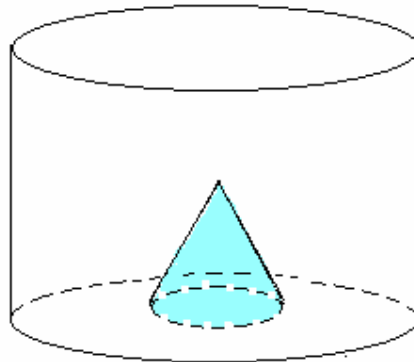


Diagram 2

Rajah 2

Calculate the volume, in cm^3 , of the remaining solid.

(use $\pi = \frac{22}{7}$)

[4 marks]

Hitungkan isipadu , dalam cm^3 , pepejal yang tinggal.

[gunakan $\pi = \frac{22}{7}$]

[4 markah]

Answer:/ Jawaban:

- 6 (a) Complete the following statement using the quantifier "all" or "some", to make it a true statement.
Lengkapkan pernyataan berikut dengan menggunakan pengkuantiti "semua" atau "sebilangan" untuk menjadikan pernyataan ini benar.

..... even numbers are multiple of 4.
nombor genap adalah gandaan 4.

- (b) Write down two implications based on the following compound statement:
Tulis dua implikasi berdasarkan pernyataan berikut:

" $x - y > 0$ if and only if $x > y$ "
 " $x - y > 0$ jika dan hanya jika $x > y$ "

- (c) Make a general conclusion by induction for the sequence of numbers 10, 29, 84, ... which follows the following pattern.
Buat satu kesimpulan umum secara aruhan bagi turutan nombor 10,29,84....yang mengikut pola berikut.

$$10 = 3(3)^1 + 1$$

$$29 = 3(3)^2 + 2$$

$$84 = 3(3)^3 + 3$$

$$\dots = \dots$$

[5 marks]
 [5 markah]

Answer:/ Jawapan:

(a)

(b) Implication 1 :
 Implikasi 1:

.....

Implication 2 :
 Implikasi 2:

(c)

.....

7. Diagram 3 shows a semicircle ADC with centre O and a sector of circle CBE, with centre C. ABOC is a straight line. OC = 14 cm and OB = 7 cm
Rajah 3 menunjukkan separuh bulatan ADC berpusat O dan sektor bulatan CBE, berpusat C. ABOC adalah satu garis lurus. OC = 14 cm dan OB = 7 cm.

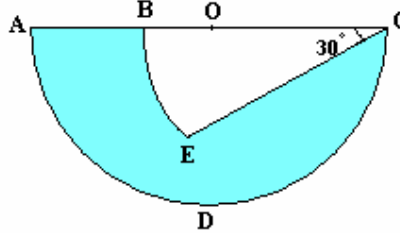


Diagram 3
Rajah 3

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

Gunakan $\pi = \frac{22}{7}$, kirakan,

- (a) The perimeter in cm of the diagram.
Perimeter dalam cm bagi rajah.
- (b) The area in cm^2 , of the shaded region.
Luas dalam cm^2 bagi kawasan berlorek.

[5 Marks]
 [5 Markah]

Answer:/ *Jawapan:*

(a)

(b)

8.

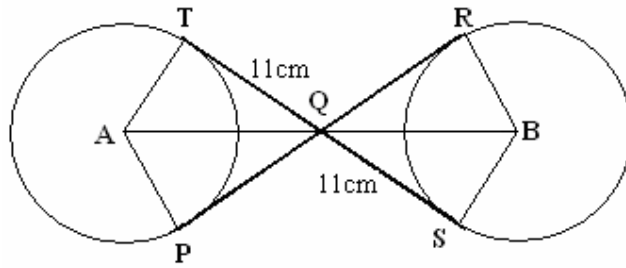


Diagram 4
Rajah 4

In Diagram 4, PQR and TQS are two common tangents to two equal circles with centres A and B respectively. The radius of the circles are 8 cm.

Given that $TQ = QS = 11$ cm, find

Dalam Rajah 4, PQR dan TQS adalah dua tangen sepunya kepada dua bulatan yang sama dengan pusat A dan B . Jejari bulatan adalah 8cm. Diberi $TQ = QS = 11$ cm, carikan

(a) the length of PR in cm.
panjang PR dalam cm

(b) the length of AB in cm.
panjang AB dalam cm

[6 marks]
[6 markah]

Answer:/ Jawapan:

(a)

(b)

9. Table 1 shows the speed of cars recorded that move along Hang Tuah Highway in the particular period of time.

Jadual 1 menunjukkan menunjukkan laju kereta-kereta yang dicatatkan melalui Lebuhraya Hang Tuah dalam suatu jangkamasa tertentu.

Speed (kmh^{-1}) <i>Laju (kmj^{-1})</i>	Frequency <i>Kekerapan</i>	Midpoint <i>Titik tengah</i>
71-75	3	
76-80	5	
81-85	10	
86-90	12	
91-95	8	
96-100	2	

Table 1/ *Jadual 1*

- (a) State the modal class.
Nyatakan kelas mod.
- (b) Complete Table 2 in the answer space, hence calculate the range of the speed of the car.
Lengkapkan Jadual 1 di ruang jawapan, seterusnya hitungkan julat laju kereta itu..

[5 marks]
[5 markah]

Answer:/ *Jawapan:*

- (a)
(b)

Range

Speed (kmh^{-1}) <i>Laju (kmj^{-1})</i>	Frequency <i>Kekerapan</i>	Midpoint <i>Titik Tengah</i>	Upper boundary <i>Sempadan atas</i>	Cumulative frequency <i>Kekerapan longgokan</i>
71-75	3			
76-80	5			
81-85	10			
86-90	12			
91-95	8			
96-100	2			

Table 2
Jadual 2

10.

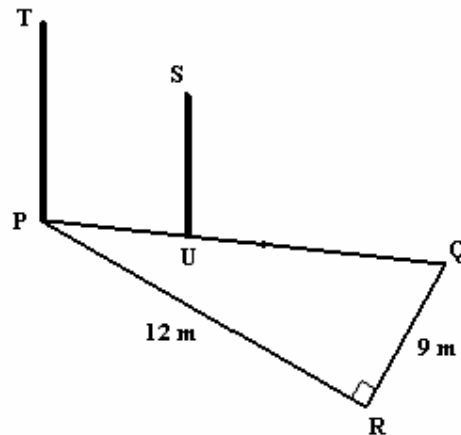


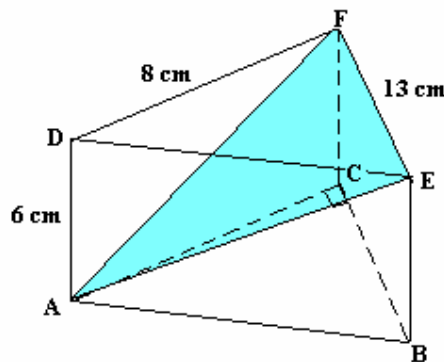
Diagram 5
Rajah 5

- (a) In Diagram 5, PQR is a right-angled triangle on a horizontal ground. PT and US are two vertical poles. The angle of elevation of S from Q is 35° and $2PU = QU$. Find

Dalam Rajah 5, PQR adalah segitiga bersudut tegak pada permukaan mendatar. PT dan US adalah dua tiang menegak. Sudut dongakan puncak S dari titik Q adalah 35° dan $2PU = QU$. Carikan

- (i) the height of SU, in m,
tinggi SU, dalam m,
- (ii) the angle of depression of Q from T given that $PT = 10$ m.
sudut tunduk puncak Q dari titik T, diberi $PT = 10$ m

[4 marks]
[4 markah]



(b)

Diagram 6
Rajah 6

Diagram 6 shows a right prism. AEF is the uniform cross-section of the prism. Calculate the angle between the planes AEF and ABC.

Rajah 6 menunjukkan sebuah prisma tegak dengan mempunyai segitiga AEF sebagai

keratan rentas seragamnya. Hitungkan sudut di antara satah AEF dengan satah ABC.

[3 marks][3 markah]

Answer:/ Jawapan:

(a) (i)

(ii)

(b)

11.

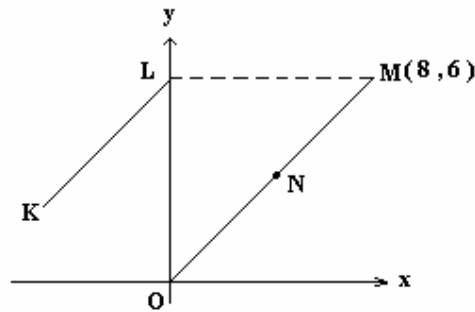


Diagram 7
Rajah 7

Diagram 7 shows two straight lines KL and OM which are drawn on a Cartesian plane. KL is parallel to OM and ML is parallel to x-axis.

Rajah 7 menunjukkan dua garis lurus KL dan OM yang dilukis di atas satah Cartesian. KL selari dengan OM dan ML selari dengan x-axis.

Find

Carikan

(a) the coordinates of L

koordinat L

(b) the equation of the straight line KL.

persamaan garis lurus bagi KL

(c) the x- intercept of the straight line KL

pintasan-x bagi garis lurus KL.

[5 marks]

[5 markah]

Answer:/ *Jawapan:*

(a)

(b)

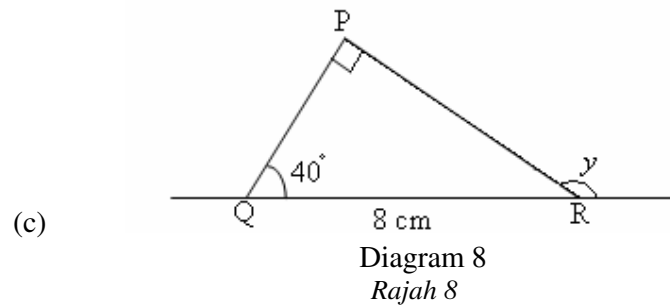
(c)

Section B

[48 marks]

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

12. (a) Given that $\tan x = 1.221$ and $90^\circ \leq x \leq 270^\circ$, find the value of x
 Diberi $\tan x = 1.221$ dan $90^\circ \leq x \leq 270^\circ$, carikan nilai x
- (b) Given that $\cos y = -0.8819$ and $90^\circ \leq y \leq 180^\circ$, find the value of y .
 Diberi $\cos y = -0.8819$ dan $90^\circ \leq x \leq 180^\circ$, carikan nilai y



In Diagram 8, QR is a straight line. Find
 Dalam Rajah 8, QR adalah satu garis lurus. Carikan

- (i) Length of PR

Panjang PR

- (ii) Sin
- y

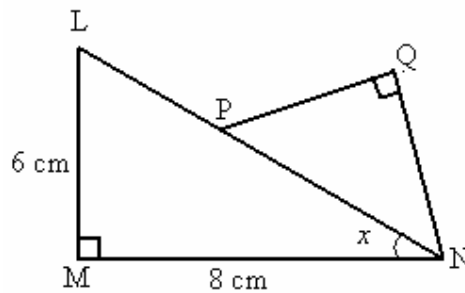
Sin y 

Diagram 9

Rajah 9

- (d) In Diagram 9, P is a midpoint of LN
 Dalam Rajah 9, P adalah titik tengah bagi LN

- (i) Find the value of sin
- x

Cari nilai sin x

- (ii) Given that $\cos \angle PNQ = \frac{3}{5}$. Determine the length of PQ

Diberi kos $\angle PNQ = \frac{3}{5}$. Tentukan panjang PQ

[12 marks]

Answer:/ Jawaban:

(a)

(b)

(c) (i)

(ii)

(d) (i)

(ii)

13.

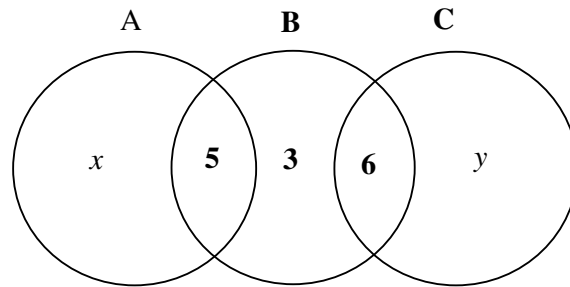


Diagram 10
Rajah 10

- a. In the Venn diagram 10, $\xi = A \cup B \cup C$
Di dalam gambar rajah Venn di atas, $\xi = A \cup B \cup C$
- (i) State the value of
Nyatakan nilai untuk
- $n(B)$,
 - $n(A' \cap C')$.
- (ii) Given that $n(A) = n(B)$, find the value of
- x ,
 - y , if $n(A \cup B) = n(B')$.
- b. Given set $G = \{ 2, 4 \}$, $H = \{ 1, 2, 3, 4, 5, 6 \}$ and $I = \{ 0, 2, 3, 4, 5, 6, 7, 8, 12 \}$ and the universal set $\xi = G \cup H \cup I$.
Diberi set $G = \{ 2, 4 \}$, $H = \{ 1, 2, 3, 4, 5, 6 \}$ dan $I = \{ 0, 2, 3, 4, 5, 6, 7, 8, 12 \}$ dan Set keseluruhan $\xi = G \cup H \cup I$.
- Draw a Venn diagram to show the relationship amongst $G \cup H \cup I$.
Lukis satu gambar rajah Venn untuk menunjukkan hubungan antara $G \cup H \cup I$.
 - List the element of $H \cap I$.
Senaraikan elemen bagi $H \cap I$.
 - Find $n(G' \cap H)$
Cari $n(G' \cap H)$

[6 marks]
 [6 Markah]

Answer:/ Jawapan:

(a) (i)

(ii)

(iii)

(b) (i)

(ii)

(iii)

14. The data above shows the marks of 40 students in a Science test.
Data di atas menunjukkan markah bagi 40 orang pelajar dalam satu ujian Sains.

72	78	42	48	33	38	36	43
68	52	46	31	44	39	49	58
54	42	67	61	91	75	92	66
45	97	36	76	38	84	52	89
80	95	64	97	67	44	92	94

Daigram 11
Jadual 11

- (a) Based on the data in Diagram 11 and by using a class interval of 10, complete Table 2 in the answer space.
Berdasarkan kepada data dalam Rajah 11 dan dengan menggunakan selang kelas 10 markah, lengkapkan Jadual 2 dalam ruang jawapan.
- (b) Based on the table in (a), calculate the estimated mean for the test
Berdasarkan jadual dalam (a) hitungkan min ujian
 [7 marks]
 [7 markah]
- (c) By using a scale of 2 cm to 10 marks on the x – axis and 2 cm to 1 student on the y- axis , draw a frequency polygon for the data.
Dengan menggunakan skala 2cm untuk 10 markah bagi paksi-x dan 2cm untuk seorang pelajar bagi paksi-y, lukis satu poligon kekerapan bagi data tersebut.
 [5 marks]
 [5 markah]

Answer:/ Jawaban:

(a)

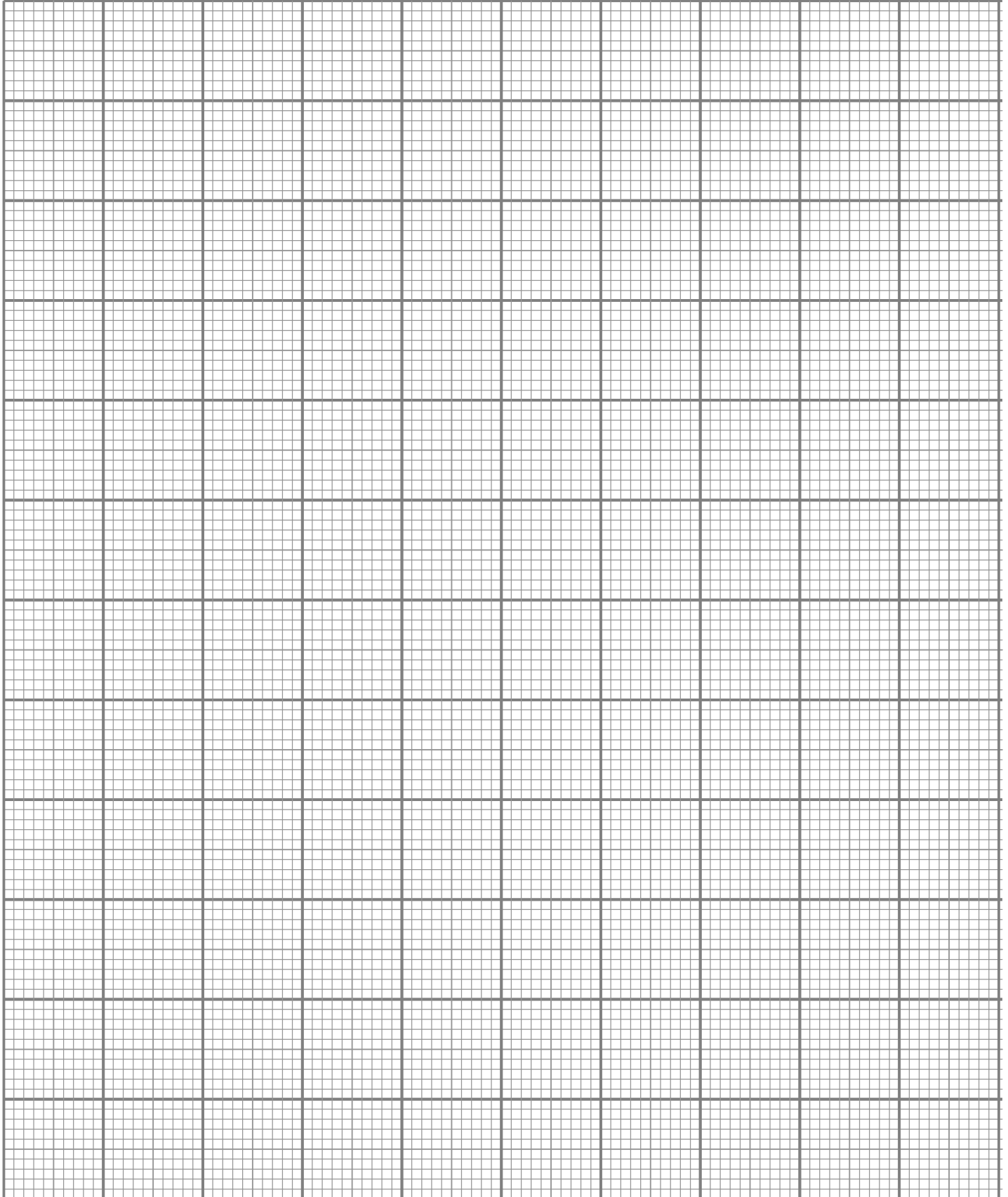
Class interval	Mid point	Frequency
30-39		
40- 49		

Table 2
Jadual 2

(b)

- (c) *Please refer to the provided graph paper.*
Sila rujuk kertas graf

Graph for Question 14



- 15 (a) $P = \{ x : 11 \leq x \leq 50, x \text{ is a integer} \}$ A number is chosen from set P. List all the elements of the following event

$P = \{ x : 11 \leq x \leq 50, x \text{ adalah satu integer} \}$. Satu nombor dipilih daripada set P.

Senaraikan semua elemen bagi peristiwa yang berikut

- (i) Getting a multiple of 6

Mendapat satu nombor gandaan 6

- (ii) Getting an integer in which the sum of the digits is less than 5.

Mendapat satu integer yang mana jumlah digitnya kurang daripada 5.

- (b) The total number of students who joined Interact Club is 65. The number of Malay students is 35, Chinese is 20 and the rest are Indians. Calculate of the probability of choosing

Jumlah pelajar yang menyertai Kelab Interact adalah 65. Bilangan pelajar Melayu adalah 35, pelajar Cina seramai 20 dan baki adalah pelajar India. Hitungkan kebarangkalian untuk memilih

- (i) a Malay student,

seorang pelajar bangsa Melayu

- (ii) an Indians student,

seorang pelajar bangsa India

- (c) A bag contains 12 blue marbles and x red marbles. If a marble is chosen randomly from the bag, the probability of choosing a red marble is $\frac{7}{10}$.

Sebuah beg mengandungi 12 biji guli berwarna biru dan x biji guli berwarna merah. Jika sebiji guli dipilih secara rawak dari beg tersebut, hitungkan kebarangkalian bahawa sebiji guli berwarna merah dipilih $\frac{7}{10}$.

- (i) Find the total number of marbles in the bag.

Cari jumlah bilangan guli di dalam beg tersebut.

- (ii) Find the total number of red marbles in the bag.

Cari bilangan guli berwarna merah di dalam beg tersebut

[7 markah]

(d)

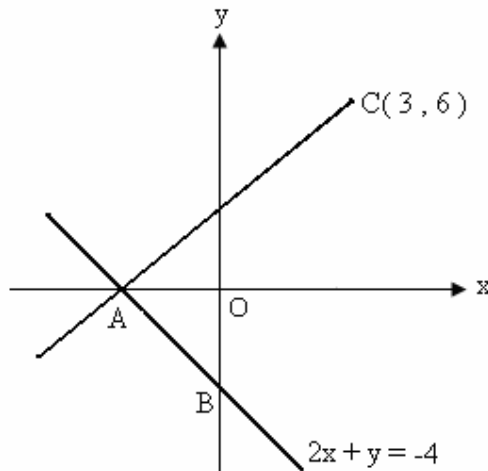


Diagram 12
Rajah 121

In Diagram 12, straight line AB intersects straight line AC at A. Given that the equation of the straight line AB is $2x + y = -4$. Calculate

Dalam Rajah 12, garis lurus AB bersilang dengan garis lurus AC pada titik A. Diberi persamaan garis lurus AB ialah $2x + y = -4$. Hitungkan

- (i) the coordinates A
koordinat A
- (ii) the equation of AC
persamaan garis lurus AC

[5 marks]
[5 markah]

Answer:/ Jawapan:

(a) (i)

(ii)

(b) (i)

(ii)

(c) (i)

(ii)

(d) (i)

(ii)

(iii)

End of paper.



JABATAN PELAJARAN MELAKA

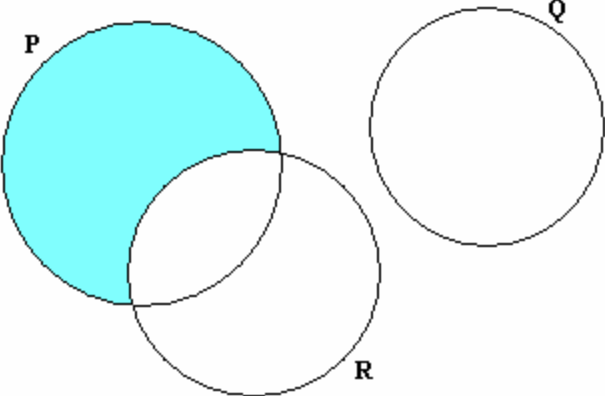
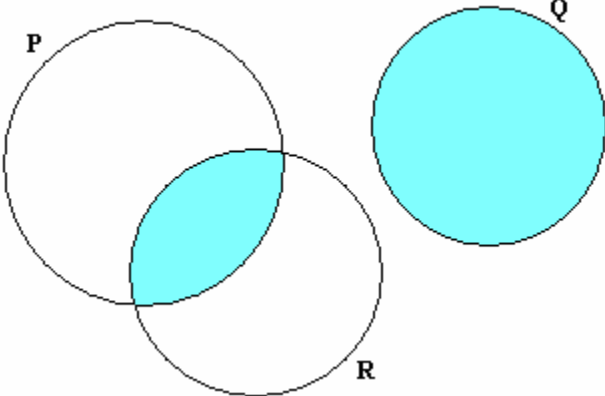
PEPERIKSAAN AKHIR TAHUN 2009

PENGESANAN 2

MARKING SCHEME

**MATHEMATICS
PAPER 2 1449/2**

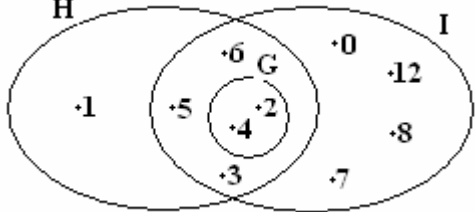
MARKAH MAKSIMUM BAGI KERTAS INI : 100 MARKAH

No	Peraturan Pemarkahan	Markah	
1	<p>(a)</p>  <p>(b)</p> 	1	
2	<p>$\angle MNO$ or $\angle ONM$</p> <p>$\tan \angle MNO = \frac{6}{10}$ or equivalent</p> <p>$\angle MNO = 30.96^\circ$ or $30^\circ 58'$</p>	1 2 1	3 4
3	<p>$2x^2 = -9x - 6 + 2$</p> <p>$2x^2 + 9x + 4 = 0$</p> <p>$(2x + 1)(x + 4) = 0$</p> <p>$x = -\frac{1}{2}$ or $x = -\frac{1}{4}$</p>	1 1 1,1	4

No	Peraturan Pemarkahan	Markah	
4	$\textcircled{1} \times 2 : m - 6p = 10$ <p>Substitute into $\textcircled{2} : 3(10 + 6p) + 4p = 8$</p> $p = -1$ $m = 4$	1	
		1 1 1	4
5	<p>Remaining volume = $\frac{22}{7} \times 10^2 \times 15 - \frac{1}{3} \times \frac{22}{7} \times 2.5^2 \times 10$</p> $= 4714.286 - 65.476$ $= 4648.81 \text{ cm}^3$	2	
		1 1	
			4
6	<p>a Some even numbers are multiple of 4.</p> <p>b Implication 1: If $x - y > 0$, then $x > y$</p> <p>Implication 2: If $x > y$, then $x - y > 0$</p> <p>c $3(3)^n + n$ where $n = 1, 2, 3, \dots$</p>	1 1 1	
		2	5
7	<p>a. $ADC = \frac{1}{2} \times 2 \times \frac{22}{7} \times 14$</p> <p>Perimeter : 72</p> <p>b. Area $CBE = \frac{30}{360} \times \frac{22}{7} \times (21)^2$</p> <p>OR</p> <p>Area $OADC = \frac{1}{2} \times \frac{22}{7} \times (14)^2$</p> <p>Area shaded region : $\frac{1}{2} \times \frac{22}{7} \times (14)^2 - \frac{30}{360} \times \frac{22}{7} \times (21)^2$</p> $= 192 \frac{1}{2} .$	1 1	
		1 1	
		1	5

No	Peraturan Pemarkahan	Markah																																				
8	(a) 22 cm (b) $AQ^2 = 11^2 + 8^2$ $= 185$ $AQ = 13.60$ $AB = 2AQ$ $= 2 (13.60)$ $= 27.2 \text{ cm.}$	1 1 1 1 1	6																																			
9	(a) 86-90 (b) range = 25 <table border="1" data-bbox="367 1041 1198 1325"> <thead> <tr> <th>Speed (kmh⁻¹) Laju (kmj⁻¹)</th> <th>Frequency Kekerapan</th> <th>Midpoint Titik Tengah</th> <th>Upper boundary Sempadan atas</th> <th>Cumulative frequency Kekerapan longgokan</th> </tr> </thead> <tbody> <tr> <td>71-75</td> <td>3</td> <td>73</td> <td>75.5</td> <td>3</td> </tr> <tr> <td>76-80</td> <td>5</td> <td>78</td> <td>80.5</td> <td>8</td> </tr> <tr> <td>81-85</td> <td>10</td> <td>83</td> <td>85.5</td> <td>18</td> </tr> <tr> <td>86-90</td> <td>12</td> <td>88</td> <td>90.5</td> <td>30</td> </tr> <tr> <td>91-95</td> <td>8</td> <td>93</td> <td>95.5</td> <td>38</td> </tr> <tr> <td>96-100</td> <td>2</td> <td>98</td> <td>100.5</td> <td>40</td> </tr> </tbody> </table>	Speed (kmh ⁻¹) Laju (kmj ⁻¹)	Frequency Kekerapan	Midpoint Titik Tengah	Upper boundary Sempadan atas	Cumulative frequency Kekerapan longgokan	71-75	3	73	75.5	3	76-80	5	78	80.5	8	81-85	10	83	85.5	18	86-90	12	88	90.5	30	91-95	8	93	95.5	38	96-100	2	98	100.5	40	1 1 1,1,1	5
Speed (kmh ⁻¹) Laju (kmj ⁻¹)	Frequency Kekerapan	Midpoint Titik Tengah	Upper boundary Sempadan atas	Cumulative frequency Kekerapan longgokan																																		
71-75	3	73	75.5	3																																		
76-80	5	78	80.5	8																																		
81-85	10	83	85.5	18																																		
86-90	12	88	90.5	30																																		
91-95	8	93	95.5	38																																		
96-100	2	98	100.5	40																																		
10	(a) $QU = 10 \text{ m}$ $\frac{SU}{10} = \tan 35^\circ$ $SU = 7.002 \text{ m}$ $\tan \angle PQT = \frac{10}{15} \text{ or } \frac{2}{3}$ $\angle PQT = 33.69^\circ \text{ or } 33^\circ 41'$	1 1 1																																				

No	Peraturan Pemarkahan	Markah	
	(b) $\angle FAC$ or $\angle CAF$ $\tan \angle FAC = \frac{6}{8} \text{ or } \frac{3}{4}$ $\angle FAC = 36.87^\circ \text{ or } 36^\circ 52'$	1	
		1	
		1	7
11	(a) (i) $L(0, 6)$ (ii) gradient, $m = \frac{3}{4}$ Equation $y = \frac{3}{4}x + 6$ or $4y = 3x + 24$ (b) $0 = \frac{3}{4}x + 6$ $x\text{-intercept} = -8$	1	
		1	
		1	
		1	
		1	
			5
12	a) $180^\circ + 50.68^\circ = 230.68^\circ$ b) $180^\circ - 28.128^\circ = 151.87^\circ$ c) i) $\sin 40^\circ = \frac{PR}{8}$ $PR = 5.142 \text{ cm}$ ii) $y = 90^\circ + 40^\circ$ or $y = 130^\circ$ $\sin 130^\circ = 0.7660$ d) i) $LN = 10$ and $\sin x = \frac{6}{10}$ $\sin x = \frac{3}{5}$ ii) $QN = 3 \text{ cm}$, $PN = 5 \text{ cm}$ $PQ = 4 \text{ cm}$ (T.P)	1,1	
		1,1	
		1	
		1	
		1	
		1	
		1	
		1	
		1	
		1	
		1	
		1	
		1	12

No	Peraturan Pemarkahan	Markah																									
13	<p>a.</p> $n(B) = 5 + 3 + 6 = 14$ $n(A' \cap C') = 3$ $n(A) = n(B)$ $x + 5 = 5 + 3 + 6$ $x + 5 = 14$ $x = 9$ $n(A \cup B) = n(B')$ $x + 5 + 3 + 6 = x + y$ $x + 14 = x + y$ $y = 14$ <p>b.</p> <p>i.</p> <p>Each set H, set I, set G correct, gives 1 mark Whole Venn diagram corrects – 1 mark</p>  <p>ii. {2, 3, 4, 5, 6}</p> <p>iii. 4</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	<p>12</p>																								
14	<p>a)</p> <table border="1" data-bbox="464 1419 906 1759"> <thead> <tr> <th>Marks</th> <th>Mid point</th> <th>Frequency</th> </tr> </thead> <tbody> <tr> <td>30-39</td> <td>34.5</td> <td>7</td> </tr> <tr> <td>40-49</td> <td>44.5</td> <td>9</td> </tr> <tr> <td>50-59</td> <td>54.5</td> <td>4</td> </tr> <tr> <td>60-69</td> <td>64.5</td> <td>6</td> </tr> <tr> <td>70-79</td> <td>74.5</td> <td>4</td> </tr> <tr> <td>80-89</td> <td>84.5</td> <td>3</td> </tr> <tr> <td>90-99</td> <td>94.5</td> <td>7</td> </tr> </tbody> </table> <p>b)</p> $\frac{7 \times 34.5 + 9 \times 44.5 + 4 \times 54.5 + 6 \times 64.5 + 4 \times 74.5 + 3 \times 84.5 + 7 \times 94.5}{7 + 9 + 4 + 6 + 4 + 3 + 7}$	Marks	Mid point	Frequency	30-39	34.5	7	40-49	44.5	9	50-59	54.5	4	60-69	64.5	6	70-79	74.5	4	80-89	84.5	3	90-99	94.5	7	<p>1, 1, 2</p> <p>2</p>	
Marks	Mid point	Frequency																									
30-39	34.5	7																									
40-49	44.5	9																									
50-59	54.5	4																									
60-69	64.5	6																									
70-79	74.5	4																									
80-89	84.5	3																									
90-99	94.5	7																									

No	Peraturan Pemarkahan	Markah	
	$\text{or } \frac{2460}{40}$ 61.5 <p>c) Refer to graph Correct axis Uniform scale from (24.5, 0) and end with (104.5 , 0) 7 point correctly plotted Draw frequency polygon correct</p>	1	
		1 1 2 1	
15	<p>(a) (i) { 12, 18, 24, 30, 36, 42, 48 }</p> <p>(ii) { 11, 12, 13, 20, 21, 22, 30, 31, 40 }</p> <p>(b) (i) $\frac{7}{13}$</p> <p>(ii) $\frac{2}{13}$</p> <p>(c) (i) $\frac{12}{x} = \frac{3}{10}$ $x = 40$</p> <p>(ii) 22</p> <p>(d) (i) $y = 0, 2x + 0 = 4$ A (-2 , 0)</p> <p>(ii) gradient, $\frac{6-0}{3-(-2)}$ or $\frac{6}{5}$</p> <p>$0 = \frac{6}{5} (-2) + c$ or $6 = \frac{6}{5} (3) + c$</p> <p>$y = \frac{6}{5} x + \frac{12}{5}$ or $5y = 6x + 12$</p>	1 1 1 1 1 1 1 1 1 1 1 1	
			12

No	Peraturan Pemarkahan	Markah	

Graph for question 14

