

1449/1
Mathematics
Paper 1
Ogos/Sept
2012
1¼ jam



JABATAN PELAJARAN NEGERI PERAK

**PEPERIKSAAN PERCUBAAN
SIJIL PELAJARAN MALAYSIA
NEGERI PERAK 2012**

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 16 halaman bercetak.

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

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

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

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

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

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

$$6 \quad P(A^c) = 1 - P(A)$$

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

Jarak

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

Titik tengah

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

$$\text{Purata laju} = \frac{\text{jarak yang dilalui}}{\text{masa yang diambil}}$$

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

$$\text{Min} = \frac{\text{hasil tambah nilai data}}{\text{bilangan data}}$$

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

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

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

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

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

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

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

SHAPES AND SPACE
BENTUK DAN RUANG

1. Area of trapezium = $\frac{1}{2} \times \text{sum of parallel sides} \times \text{height}$
Luas trapezium = $\frac{1}{2} \times \text{hasil tambah dua sisi selari} \times \text{tinggi}$
2. Circumference of circle = $\pi d = 2\pi r$
Lilitan bulatan = $\pi d = 2\pi r$
3. Area of circle = πr^2
Luas bulatan = πr^2
4. Curved surface area of cylinder = $2\pi rh$
Luas permukaan melengkung silinder = $2\pi r h$
5. Surface area of sphere = $4\pi r^2$
Luas permukaan sfera = $4\pi r^2$
6. Volume of right prism = cross sectional area \times length
Isipadu prisma tegak = luas keratan rentas \times panjang
7. Volume of cylinder = $\pi r^2 h$
Isipadu silinder = $\pi r^2 h$
8. Volume of cone = $\frac{1}{3} \pi r^2 h$
Isipadu kon = $\frac{1}{3} \pi r^2 h$
9. Volume of sphere = $\frac{4}{3} \pi r^3$
Isipadu sfera = $\frac{4}{3} \pi r^3$
10. Volume of right pyramid = $\frac{1}{3} \times \text{base area} \times \text{height}$
Isipadu piramid tegak = $\frac{1}{3} \times \text{luas tapak} \times \text{tinggi}$
11. Sum of interior angles of a polygon = $(n - 2) \times 180^\circ$
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 25.58 correct to two significant figures.
Bundarkan 25.58 betul kepada dua angka bererti.
- A 25
B 25.0
C 26
D 26.0
- 2 Given that $674000000 = m \times 10^n$, where $m \times 10^n$ is a number in standard form. State the value of m and of n .
Diberi bahawa $674000000 = m \times 10^n$, dengan keadaan $m \times 10^n$ adalah nombor dalam bentuk piawai. Nyatakan nilai m dan n .
- A $m = 6.74, n = -8$
B $m = 6.74, n = 8$
C $m = 67.4, n = -7$
D $m = 67.4, n = 7$
- 3
$$\frac{0.00056}{2.8 \times 10^5}$$
- A 2×10^{-6}
B 2×10^{-7}
C 2×10^{-8}
D 2×10^{-9}
- 4 450 pieces of A4 size paper make up one ream of paper. If each piece of paper has a mass of 270 milligrams, the mass of two reams of papers in grams is
Satu rim kertas bersaiz A4 mengandungi 450 keping kertas. Jika sekeping kertas mempunyai jisim 270 miligram, jisim untuk dua rim kertas dalam gram adalah
- A 1.215×10^2
B 1.215×10^5
C 2.43×10^2
D 2.43×10^5
- 5 Express $8(8^2 + 8 + 2)$ as in base eight.
Ungkapkan $8(8^2 + 8 + 2)$ sebagai satu nombor dalam asas lapan.
- A 2011_8
B 2110_8
C 1102_8
D 1120_8
- 6 $11110_2 + 111_2 =$
- A 100101_2
B 110101_2
C 101111_2
D 111000_2
- 7 In Diagram 1, PQRST is a regular pentagon. UPT and VRS are straight lines with $UT = VS$.
Dalam Rajah 1, PQRST ialah sebuah pentagon sekata. UPT dan VRS ialah garis lurus dengan $UT = VS$.

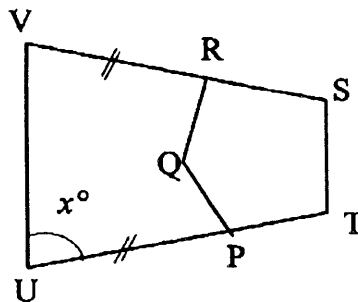


Diagram 1
Rajah 1

The value of x is
Nilai x ialah

- A 52
B 60
C 72
D 108

- 8 In Diagram 2, $PQRW$ is a rhombus and VWP is a straight line.
 Dalam Rajah 2, $PQRW$ ialah rombus dan VWP ialah garis lurus.

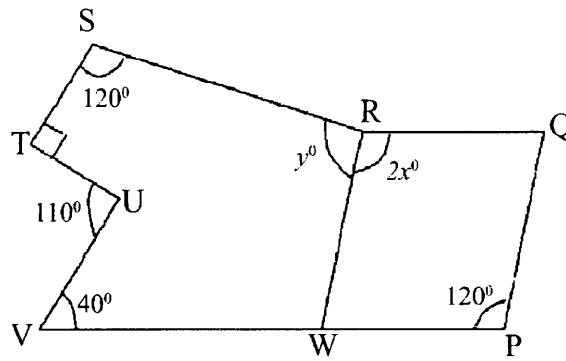


Diagram 2
Rajah 2

Calculate the value of $x + y$.
 Hitung nilai $x + y$.

- | | | | |
|---|-----|---|-----|
| A | 160 | C | 220 |
| B | 170 | D | 230 |

- 9 In Diagram 3, PAQ and QBR are tangents to the circle with center O , at point A and B respectively.
 Dalam Rajah 3, PAQ dan QBR adalah tangen kepada bulatan yang berpusat O di titik A dan B masing-masing.

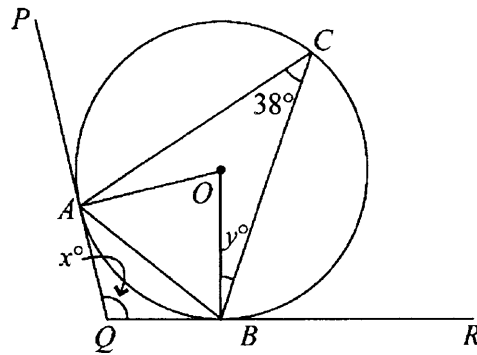


Diagram 3
Rajah 3

Given that $AC = BC$, find the value of $x + y$.
 Diberi bahawa $AC = BC$, cari nilai $x + y$.

- | | | | |
|---|----|---|-----|
| A | 19 | C | 104 |
| B | 57 | D | 123 |

- 10 In Diagram 4, the rectangle PQRS is the image of the rectangle JKLM under a reflection.
 Dalam Rajah 4, segiempat PQRS adalah imej bagi segiempat JKLM di bawah suatu pantulan

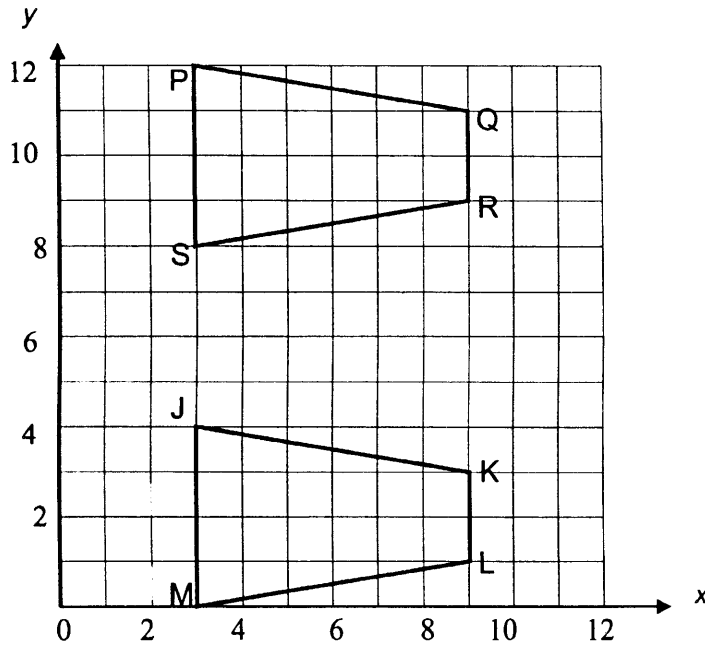


Diagram 4
Rajah 4

Which of the following is the axis symmetry of the transformation?

Antara yang berikut yang manakah paksi simetri bagi penjelmaan tersebut?

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

- 11 Transformation F is a reflection in the line $y = 3$. Transformation E is a reflection in the line $y = x$. State the coordinates of image of point $R(3, 1)$ under the combined transformation FE.

Penjelmaan F ialah pantulan pada garis $y = 3$. Penjelmaan E ialah pantulan pada garis $y = x$. Nyatakan koordinat imej bagi titik $R(3, 1)$ di bawah gabungan penjelmaan FE.

- A $(3, 5)$
- B $(1, 3)$
- C $(3, 1)$
- D $(5, 3)$

- 12 In diagram 5, point $Q(-0.5, 0.866)$ is on the unit circle.
 Dalam rajah 5, titik $Q(-0.5, 0.866)$ terletak pada bulatan unit.

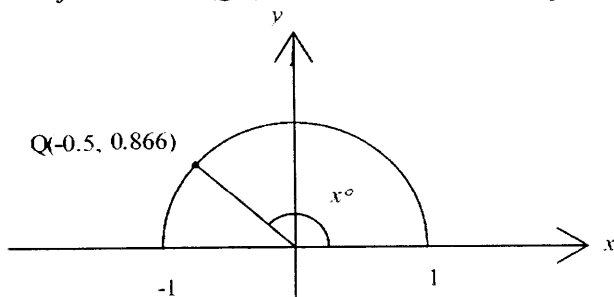


Diagram 5
Rajah 5

Find the value of $\sin x^\circ + \cos x^\circ$.
 Cari nilai $\sin x^\circ + \cos x^\circ$.

- A 0.366
- B 1.366
- C -0.366
- D -1.366

- 13 In Diagram 6, WXYZ is a trapezium and PWX is a straight line.
 Dalam Rajah 6, WXYZ ialah satu trapezium dan PWX ialah satu garis lurus.

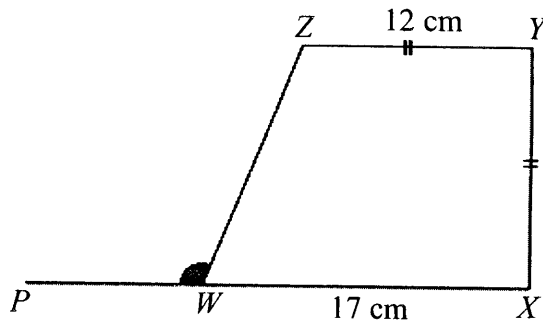


Diagram 6
Rajah 6

Given that $ZY = 12$ cm and $WX = 17$ cm, find $\tan \angle PWZ$.
 Diberi $ZY = 12$ cm dan $WX = 17$ cm, cari $\tan \angle PWZ$.

- | | | | |
|---|-----------------|---|----------------|
| A | $-\frac{13}{5}$ | C | $\frac{13}{5}$ |
| B | $-\frac{12}{5}$ | D | $\frac{12}{5}$ |
- 14 Diagram 7 shows a cuboid with a rectangular base TUVW. X is the midpoint of TW.
 Rajah 7 menunjukkan sebuah kuboid bertapak segiempat tepat TUVW. X ialah titik tengah bagi TW.

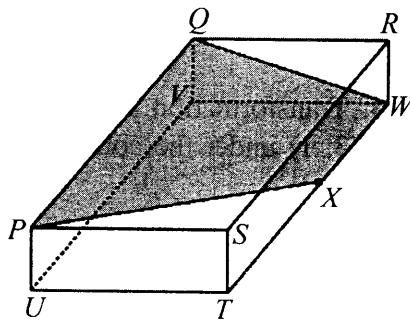


Diagram 7
Rajah 7

Name the angle between the plane $PXWQ$ and the plane $PQRS$.
 Namakan sudut di antara satah $PXWQ$ dengan satah $PQRS$.

- | | | | |
|---|--------------|---|--------------|
| A | $\angle XPT$ | C | $\angle QWR$ |
| B | $\angle QWX$ | D | $\angle RQW$ |

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- 15 In Diagram 8, AB and CD are two vertical pillars on a horizontal ground.
Dalam Rajah 8, AB dan CD ialah dua tiang tegak pada satu permukaan mengufuk.

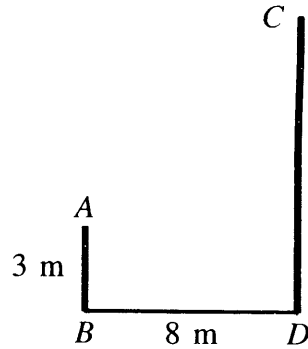


Diagram 8
 Rajah 8

The angles of depression of A from C is 40° . Find the height, in m , of the pillar CD .
Sudut tunduk A dari C ialah 40° . Cari tinggi dalam m , tiang CD itu.

- | | | | |
|---|------|---|-------|
| A | 6.71 | C | 9.71 |
| B | 9.35 | D | 12.53 |

- 16 Diagram 9 shows three points, P , Q and R on a horizontal plane. PT is a vertical tower.
Rajah 9 menunjukkan tiga titik P , Q dan R di atas satah mengufuk. PT adalah satu menara tegak.

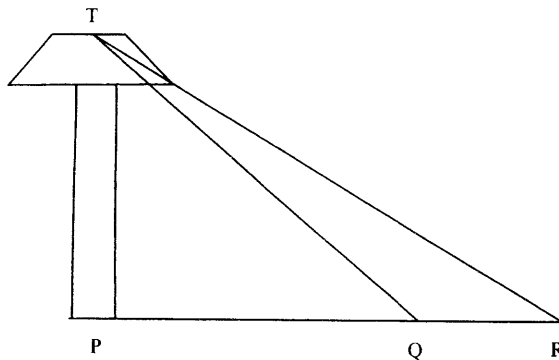


Diagram 9
 Rajah 9

It is given that $QR = 10$ m, the angle of elevation of T from R is 50° and $PQ = 2QR$.
 Calculate the angle of elevation of T from Q .

*Diberi bahawa $QR = 10$ m, sudut dongakan T dari R ialah 50° dan $PQ = 2QR$.
 Hitung sudut dongakan T dari Q .*

- | | | | |
|---|---------------|---|---------------|
| A | 48.53° | C | 58.53° |
| B | 56.78° | D | 60.78° |

- 17 In diagram 10, G, H and K are three points on a horizontal plane. The bearing of K from G is 200° .

Dalam rajah 10, G, H dan K ialah tiga titik pada satah mengufuk. Bearing K dari G ialah 200° .

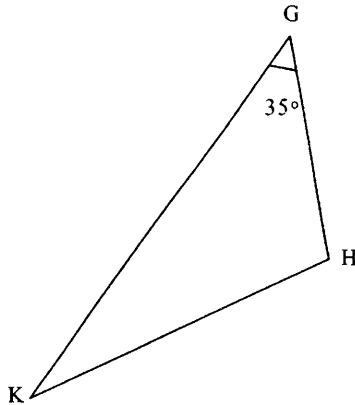


Diagram 10
Rajah 10

Find the bearing of G from H.
Cari bearing G dari H.

- | | | | |
|---|-------------|---|-------------|
| A | 215° | C | 305° |
| B | 285° | D | 345° |

- 18 In Diagram 11, N is the North Pole, S is the South Pole and O is the centre of the earth. P is the centre of the circle of latitude 30°N .

Dalam Rajah 11, N ialah Kutub Utara, S ialah Kutub Selatan dan O ialah pusat bumi. P ialah pusat bulatan pada latitud 30°U .

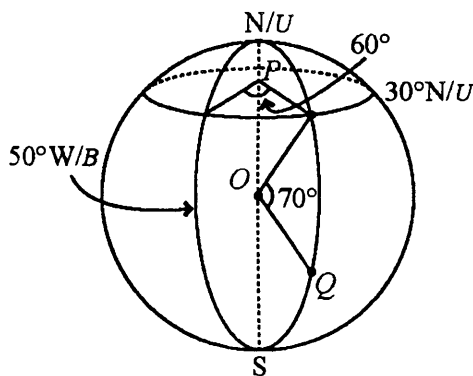


Diagram 11
Rajah 11

Find the location of Q.
Cari kedudukan Q.

- | | | | |
|---|--|---|--|
| A | $(20^\circ\text{N}, 10^\circ\text{E})$
$(20^\circ\text{U}, 10^\circ\text{T})$ | C | $(40^\circ\text{S}, 10^\circ\text{E})$
$(40^\circ\text{S}, 10^\circ\text{T})$ |
| B | $(20^\circ\text{S}, 30^\circ\text{E})$
$(20^\circ\text{S}, 30^\circ\text{T})$ | D | $(70^\circ\text{S}, 60^\circ\text{E})$
$(70^\circ\text{S}, 60^\circ\text{T})$ |

19 $(2x - 3y)^2 - 4x(x - 2y) =$

- | | | | |
|---|---------------|---|----------------|
| A | $4xy + 9y^2$ | C | $20xy + 9y^2$ |
| B | $-4xy + 9y^2$ | D | $-20xy - 9y^2$ |

- 20 Express $\frac{11}{12b} - \frac{3(2-b)}{4b^2}$ as a single fraction in its simplest form.

Ungkapkan $\frac{11}{12b} - \frac{3(2-b)}{4b^2}$ sebagai satu pecahan tunggal dalam bentuk terendah.

A $\frac{10b - 9}{6b^2}$

C $\frac{7b - 3}{6b^2}$

B $\frac{b - 9}{6b^2}$

D $\frac{5b - 3}{6b^2}$

- 21 Given that $y = \frac{w^2}{1+x}$, express x in terms of w and y .

Diberi bahawa $y = \frac{w^2}{1+x}$, ungkapkan x dalam sebutan w dan y .

A $x = \frac{w^2}{y} + 1$

C $x = w^2 + y$

B $x = \frac{w^2}{y} - 1$

D $x = w^2 - y$

- 22 Given that $4 - \frac{3(k-2)}{3} = \frac{k}{2}$, find the value of k .

Diberi bahawa $4 - \frac{3(k-2)}{3} = \frac{k}{2}$, cari nilai k .

A $\frac{4}{3}$

C 4

B $\frac{10}{3}$

D 6

23 $\frac{1}{(7^{\frac{1}{3}})^2} =$

A $\sqrt[2]{7^{-3}}$

C $\sqrt[2]{7^3}$

B $\sqrt[3]{7^{-2}}$

D $\sqrt[3]{7^2}$

24 Simplify $\frac{2pq^3}{(9p^4q^{-2})^{\frac{1}{2}}}$

Ringkaskan $\frac{2pq^3}{(9p^4q^{-2})^{\frac{1}{2}}}$

A $\frac{2q^4}{9p^2}$

C $\frac{2pq^4}{3}$

B $\frac{2q^5}{9p^3}$

D $\frac{2q^4}{3p}$

25 Solve the linear inequality $4 - \frac{x}{3} < \frac{x}{2} + 5$.

Selesaikan ketaksamaan linear $4 - \frac{x}{3} < \frac{x}{2} + 5$.

A $x < -\frac{6}{5}$

C $x > 2$

B $x > -\frac{6}{5}$

D $x < 2$

26 List all the integers y that satisfy both the simultaneous linear inequalities $\frac{2}{3}y - 5 < 4$

and $\frac{y}{2} \geq 5$.

Senaraikan semua integer y yang memuaskan kedua-dua ketaksamaan linear serentak

$\frac{2}{3}y - 5 < 4$ dan $\frac{y}{2} \geq 5$.

A 10, 11, 12, 13, 14

C 11, 12, 13, 14

B 10, 11, 12, 13

D 11, 12, 13

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 three children 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 tiga orang anak tidak ditunjukkan.

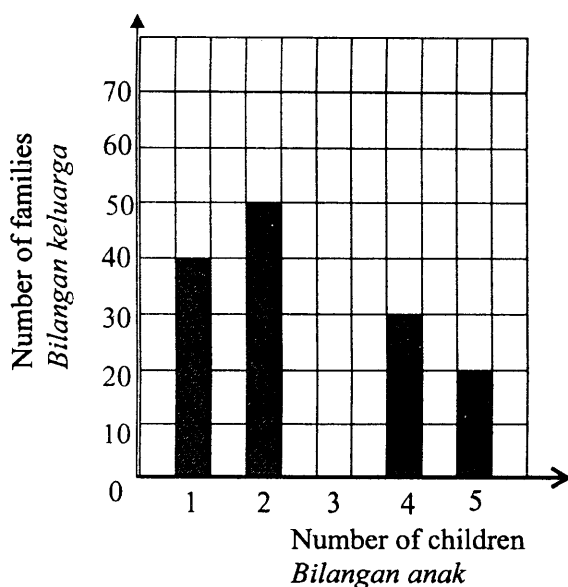


Diagram 12
Rajah 12

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

Find the percentage of families that have three children.

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

Cari peratus keluarga yang mempunyai tiga orang anak.

A 25

B 30

C 50

D 60

<http://tutormansor.wordpress.com/>

- 31 Diagram 14 is a Venn diagram showing the elements of the universal set, ξ , set T and set U .
Rajah 14 ialah gambar rajah Venn yang menunjukkan unsur-unsur set semesta, ξ , set T and set U .

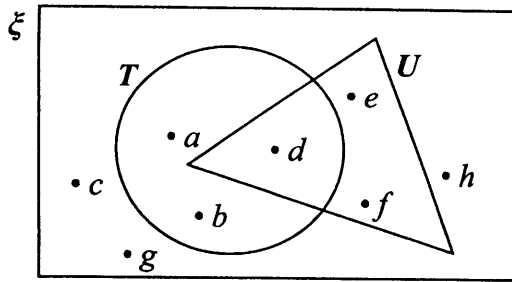


Diagram 14
Rajah 14

List all the elements of set U' .
Senaraikan semua unsur bagi set U' .

- | | | | |
|---|----------------------|---|----------------|
| A | { a, b, c, d, g, h } | C | { a, b, c, g } |
| B | { a, b, c, h } | D | { a, b, c } |

- 32 Diagram 15 is a Venn diagram showing the number of students in sets G , S and M . It is given that set $G = \{\text{Geography Society Members}\}$, set $S = \{\text{Science Society Members}\}$, set $M = \{\text{Mathematics Society Members}\}$ and universal set, $\xi = G \cup S \cup M$.
Rajah 15 ialah gambar rajah Venn yang menunjukkan bilangan murid bagi set G , set S dan set M . Diberi set $G = \{\text{Ahli Persatuan Geografi}\}$, set $S = \{\text{Ahli Persatuan Sains}\}$, set $M = \{\text{Ahli Persatuan Matematik}\}$ dan $\xi = G \cup S \cup M$.

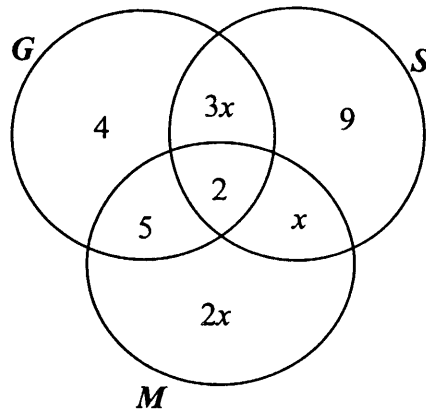


Diagram 15
Rajah 15

If the number of students who join the Science Society is 23, find the number of students who join two societies only.
Jika bilangan murid yang menyertai Persatuan Sains adalah 23 orang, cari bilangan murid yang menyertai dua persatuan sahaja.

- | | | | |
|---|----|---|----|
| A | 8 | C | 14 |
| B | 12 | D | 17 |

- 33 Find the y-intercept of straight line $2y - \frac{3}{2}x = 8$.

Cari pintasan-y bagi garis lurus $2y - \frac{3}{2}x = 8$.

- A $\frac{3}{4}$ C 4
B $\frac{4}{3}$ D 16

- 34 In diagram 16, $PQ = 5$ units and $OP = 2OR$.
Dalam rajah 16, $PQ = 5$ unit dan $OP = 2OR$.

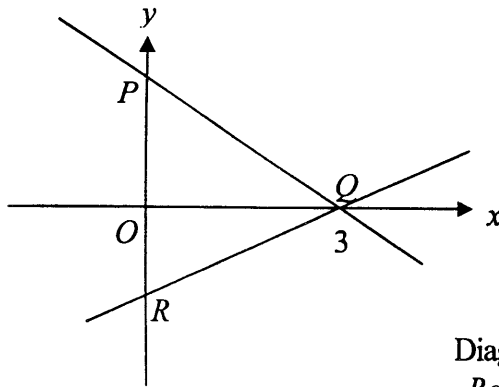


Diagram 16
Rajah 16

Find the equation of the straight line QR .
Cari persamaan bagi garis lurus QR .

- A $y = \frac{1}{2}x - \frac{3}{2}$ C $y = \frac{2}{3}x + 2$
B $y = 2x - \frac{3}{2}$ D $y = \frac{2}{3}x - 2$

- 35 In an examination, the probability of Ahmad answering a question wrongly is $\frac{7}{24}$. Estimate how many questions are correct if Ahmad answered a total of 120 questions.

Dalam satu peperiksaan, kebarangkalian Ahmad salah menjawab satu soalan ialah $\frac{7}{24}$.
Ramalkan bilangan soalan yang dijangka betul jika Ahmad menjawab sejumlah 120 soalan.

- A 20 C 85
B 35 D 90

SKEMA PEMARKAHAN PEPERIKSAAN PERCUBAAN SPM 2012

MATHEMATICS PAPER 1

1449/1

SULIT

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

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