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LEMBAGA PEPERIKSAAN
KEMENTERIAN PELAJARAN MALAYSIA

SIJIL PELAJARAN MALAYSIA 2012

1449/1

MATHEMATICS

Kertas 1

Nov./Dis.

1 $\frac{1}{4}$ jam

Satu jam lima belas minit

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

1. *Kertas soalan ini adalah dalam dwibahasa.*
2. *Soalan dalam bahasa Inggeris mendahului soalan yang sepadan dalam bahasa Melayu.*
3. *Calon dikehendaki membaca maklumat di halaman belakang kertas soalan ini.*

Kertas soalan ini mengandungi 32 halaman bercetak:

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MATHEMATICAL FORMULAE
RUMUS MATEMATIK

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

Rumus-rumus berikut boleh membantu anda menjawab soalan. Simbol-simbol yang diberi adalah yang biasa digunakan.

RELATIONS
PERKAITAN

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

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

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

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

5 Distance / Jarak

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

6 Midpoint / Titik tengah

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

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

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

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

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

9 Mean = $\frac{\text{sum of (classmark} \times \text{frequency)}}{\text{sum of frequencies}}$

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

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

11 $P(A) = \frac{n(A)}{n(S)}$

12 $P(A') = 1 - P(A)$

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

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

**SHAPES AND SPACE
BENTUK DAN RUANG**

- 1 Area of trapezium = $\frac{1}{2} \times \text{sum of parallel sides} \times \text{height}$
Luas trapezium = $\frac{1}{2} \times \text{hasil tambah sisi selari} \times \text{tinggi}$
- 2 Circumference of circle = $\pi d = 2\pi r$
Lilitan bulatan = $\pi d = 2\pi j$
- 3 Area of circle = πr^2
Luas bulatan = πj^2
- 4 Curved surface area of cylinder = $2\pi rh$
Luas permukaan melengkung silinder = $2\pi jt$
- 5 Surface area of sphere = $4\pi r^2$
Luas permukaan sfera = $4\pi j^2$
- 6 Volume of right prism = cross sectional area \times length
Isi padu prisma tegak = luas keratan rentas \times panjang
- 7 Volume of cylinder = $\pi r^2 h$
Isi padu silinder = $\pi j^2 t$
- 8 Volume of cone = $\frac{1}{3} \pi r^2 h$
Isi padu kon = $\frac{1}{3} \pi j^2 t$
- 9 Volume of sphere = $\frac{4}{3} \pi r^3$
Isi padu sfera = $\frac{4}{3} \pi j^3$
- 10 Volume of right pyramid = $\frac{1}{3} \times \text{base area} \times \text{height}$
Isi padu piramid tegak = $\frac{1}{3} \times \text{luas tapak} \times \text{tinggi}$
- 11 Sum of interior angles of a polygon
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 3.0567 correct to three significant figures.

Bundarkan 3.0567 betul kepada tiga angka bererti.

- A 3.05
- B 3.056
- C 3.057
- D 3.06

- 2 Express 3987.3 in standard form.

Ungkapkan 3987.3 dalam bentuk piawai.

- A 3.9873×10^2
- B 3.9873×10^{-2}
- C 3.9873×10^3
- D 3.9873×10^{-3}

3 $\frac{746.5 \times 10^{-3}}{10^{-7}} =$

- A 7.465×10^7
- B 7.465×10^6
- C 7.465×10^{-6}
- D 7.465×10^{-7}

- 4 Diagram 1 shows a steel block with a square cross section.

Rajah 1 menunjukkan sebuah blok keluli dengan keratan rentasnya berbentuk segi empat sama.

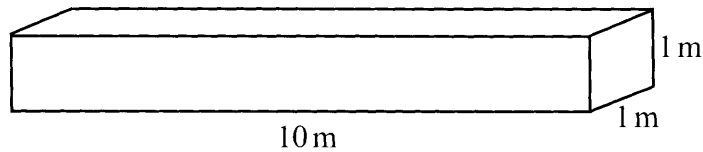


Diagram 1

Rajah 1

A factory melts the steel block and makes ball bearings, each one with a mass of 2.5 g.

Given that the density of steel is 7850 kg/m^3 , find the number of ball bearings produced.

Sebuah kilang meleburkan blok keluli itu dan membuat gelas bebola, setiap satu dengan jisim 2.5 g.

Diberi ketumpatan keluli ialah 7850 kg/m^3 , cari bilangan gelas bebola yang dihasilkan.

$$\left[\text{Density} = \frac{\text{mass (kg)}}{\text{volume (m}^3\text{)}} \right]$$

$$\left[\text{Ketumpatan} = \frac{\text{jisim (kg)}}{\text{isi padu (m}^3\text{)}} \right]$$

- A 1.96×10^5
 B 1.96×10^8
 C 3.14×10^4
 D 3.14×10^7
- 5 Convert $3 \times 8^4 + 2 \times 8^2 + 5$ to a number in base eight.
Tukarkan $3 \times 8^4 + 2 \times 8^2 + 5$ kepada satu nombor dalam asas lapan.
- A 3025_8
 B 3250_8
 C 30205_8
 D 30250_8

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6 $110110_2 - 11101_2 =$

- A 10000_2
- B 11001_2
- C 100010_2
- D 101011_2

- 7 Diagram 2 shows an irregular hexagon, $PQRSTU$.
Rajah 2 menunjukkan heksagon tidak sekata, PQRSTU.

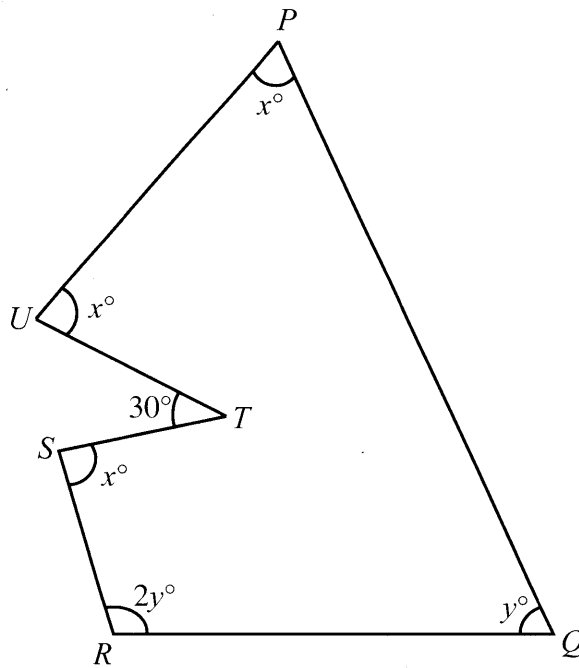


Diagram 2
Rajah 2

Find the value of $x + y$.

Cari nilai $x + y$.

- A 130
- B 190
- C 230
- D 250

- 8 In Diagram 3, $PQRSTU$ is a regular hexagon with centre O . QUV and STV are straight lines.

Dalam Rajah 3, $PQRSTU$ ialah heksagon sekata dengan pusat O . QUV dan STV ialah garis lurus.

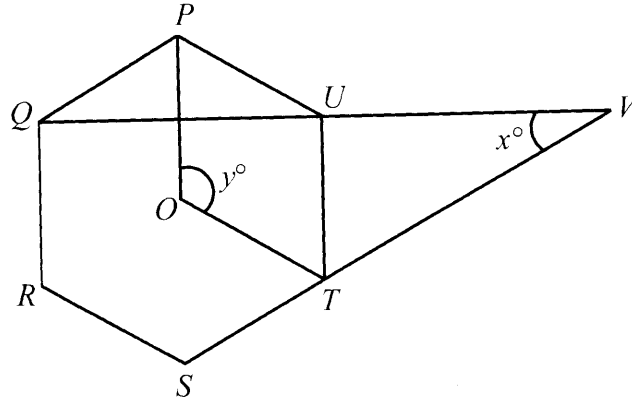


Diagram 3
Rajah 3

Find the value of $x + y$.

Cari nilai $x + y$.

- A 135
- B 150
- C 165
- D 180

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- 9 In Diagram 4, PQR is a tangent to the circle QST with centre O , at Q .
 Dalam Rajah 4, PQR ialah tangen kepada bulatan QST berpusat O , di Q .

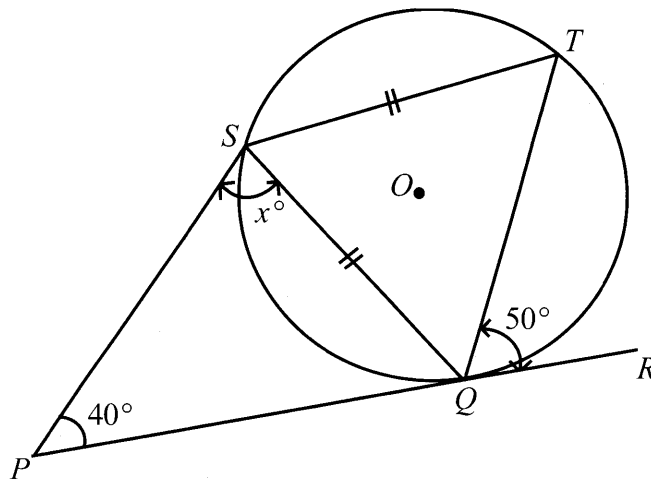


Diagram 4
 Rajah 4

Find the value of x .

Cari nilai x .

- A 60
- B 65
- C 70
- D 75

10 Diagram 5 shows four quadrilaterals drawn on a grid of equal squares.

Rajah 5 menunjukkan empat sisi empat dilukis pada grid segi empat sama yang sama besar.

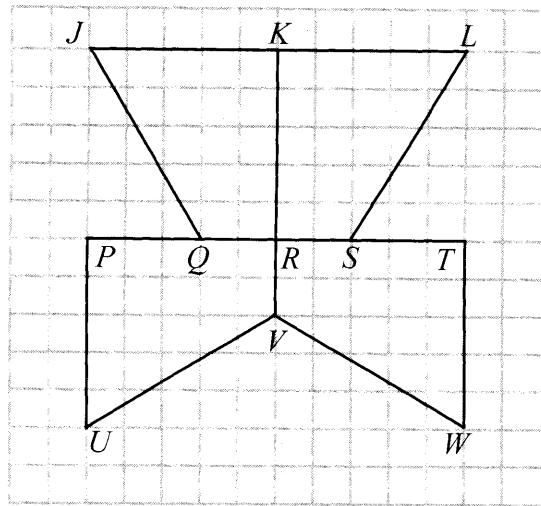


Diagram 5
Rajah 5

Find the correct pairing of object, the line of reflection and its image.

Cari pasangan objek, paksi pantulan dan imejnya yang betul.

	Object <i>Objek</i>	Line of reflection <i>Paksi pantulan</i>	Image <i>Imej</i>
A	<i>PUVR</i>	<i>KV</i>	<i>KRSL</i>
B	<i>JQRK</i>	<i>PR</i>	<i>PUVR</i>
C	<i>RVWT</i>	<i>UL</i>	<i>RQJK</i>
D	<i>KRSL</i>	<i>JW</i>	<i>RVWT</i>

- 11 Diagram 6 shows five quadrilaterals, *P*, *A*, *B*, *C* and *D*, drawn on a grid of equal squares.

Rajah 6 menunjukkan lima sisi empat, P, A, B, C dan D, dilukis pada grid segi empat sama yang sama besar.

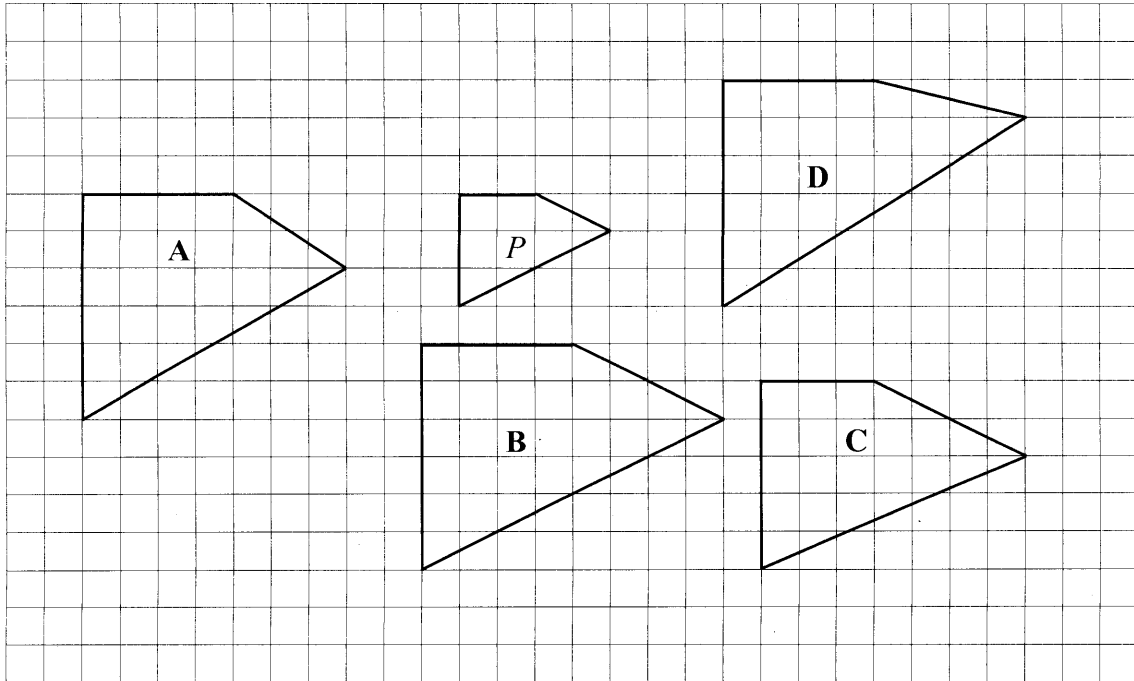


Diagram 6
Rajah 6

Which of the quadrilaterals, *A*, *B*, *C* or *D*, is the image of quadrilateral *P* under an enlargement?

Antara sisi empat A, B, C dan D, yang manakah adalah imej bagi sisi empat P di bawah suatu pembesaran?

- 12 Diagram 7 shows two right angled triangles, LQM and MPN . KLM is a straight line and $MP = PQ$.

Rajah 7 menunjukkan dua segi tiga bersudut tegak LQM dan MPN . KLM ialah garis lurus dan $MP = PQ$.

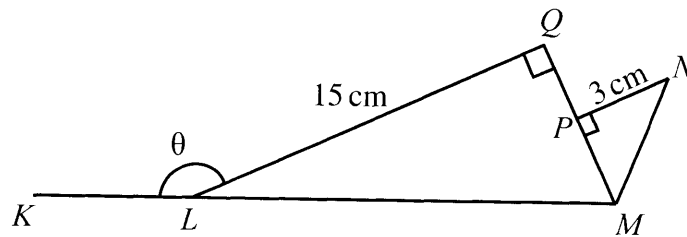


Diagram 7
Rajah 7

Given that $\sin \angle NMP = \frac{3}{5}$, find the value of $\cos \theta$.

Diberi bahawa $\sin \angle NMP = \frac{3}{5}$, cari nilai bagi $\cos \theta$.

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

- 13 Diagram 8 shows the graph of $y = \sin x$ and $y = \cos x$.

Rajah 8 menunjukkan graf bagi $y = \sin x$ dan $y = \cos x$.

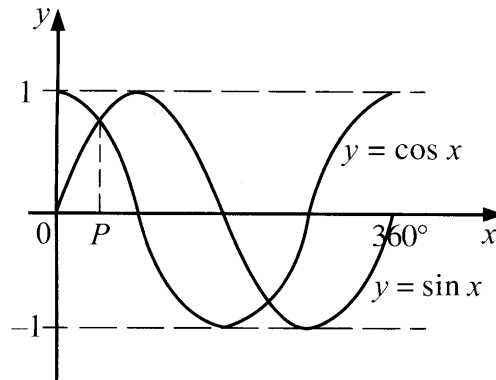


Diagram 8
Rajah 8

State the value of P .

Nyatakan nilai bagi P .

- A 15°
 B 30°
 C 45°
 D 60°
- 14 Diagram 9 shows a right prism $PQRSTU$ with a rectangular base $PQRS$.
 Rajah 9 menunjukkan sebuah prisma tegak $PQRSTU$ dengan tapak segi empat tepat $PQRS$.

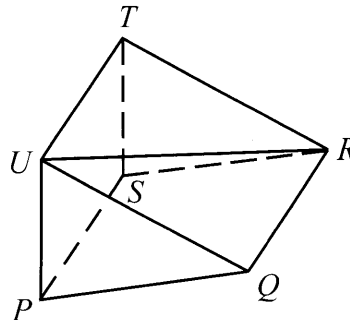


Diagram 9
Rajah 9

Name the angle between the line RU and the base $PQRS$.

Namakan sudut di antara garis RU dengan tapak $PQRS$.

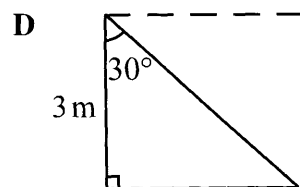
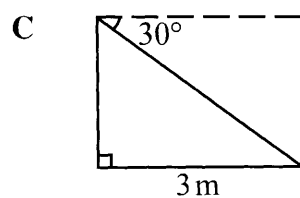
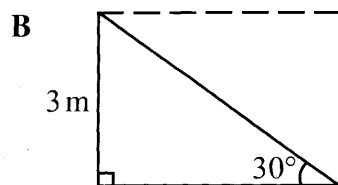
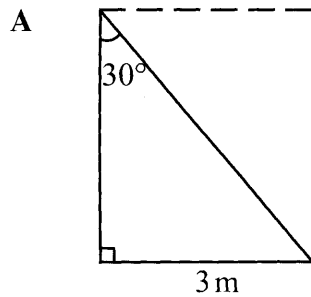
- A $\angle URP$
 B $\angle URQ$
 C $\angle RUP$
 D $\angle RUQ$

- 15 A ball is placed on the ground. Ahmad is standing 3 m away from the ball. The angle of depression of the ball from Ahmad is 30° .

Which diagram represents the situation?

Sebuah bola terletak di atas permukaan tanah. Ahmad berdiri 3 m dari bola itu. Sudut tunduk bola itu dari Ahmad ialah 30° .

Rajah manakah yang mewakili situasi tersebut?



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- 16 Diagram 10 shows a point H on the helicopter. M and L are two points on the horizontal ground.

Rajah 10 menunjukkan titik H pada sebuah helikopter. M dan L ialah dua titik pada satah mengufuk.

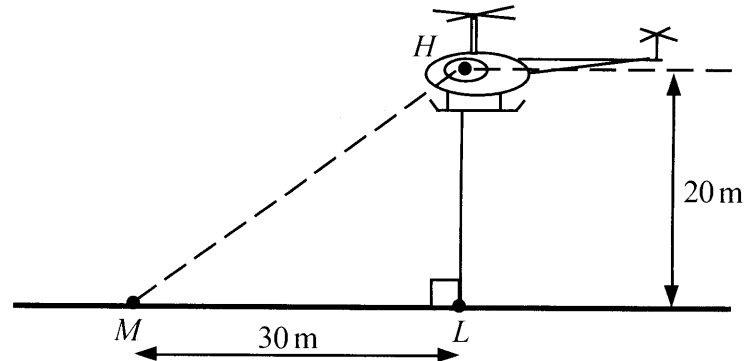


Diagram 10
Rajah 10

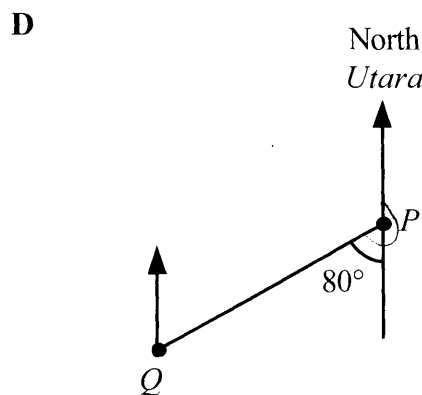
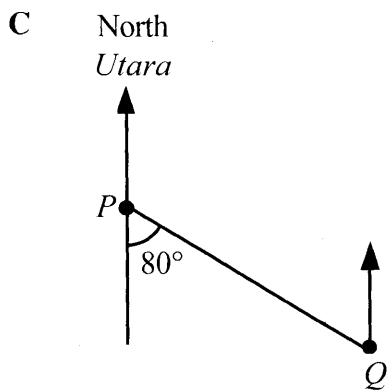
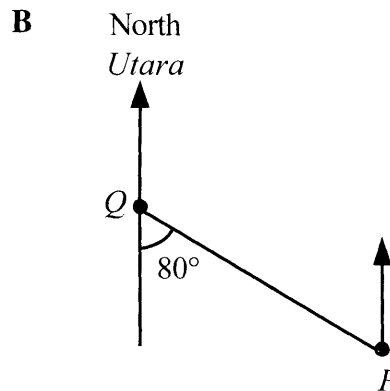
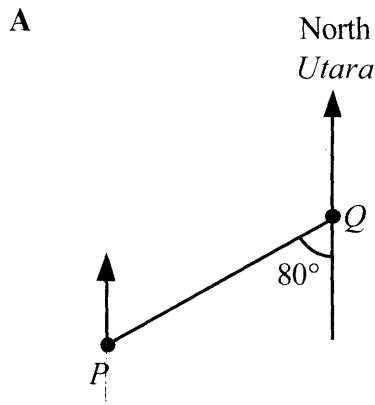
Calculate the angle of depression of point M from point H .

Hitung sudut tunduk titik M dari titik H .

- A $33^\circ 41'$
- B $41^\circ 49'$
- C $48^\circ 11'$
- D $56^\circ 19'$

17 Point P and point Q lie on a horizontal plane. The bearing of Q from P is 080° . Which diagram shows the positions of P and Q ?

Titik P dan titik Q terletak pada suatu satah mengufuk. Bearing Q dari P ialah 080° . Rajah manakah yang menunjukkan kedudukan bagi P dan Q ?



- 18 In Diagram 11, N is the North Pole, S is the South Pole and NOS is the axis of the earth.

Dalam Rajah 11, U ialah Kutub Utara, S ialah Kutub Selatan dan UOS ialah paksi bumi.

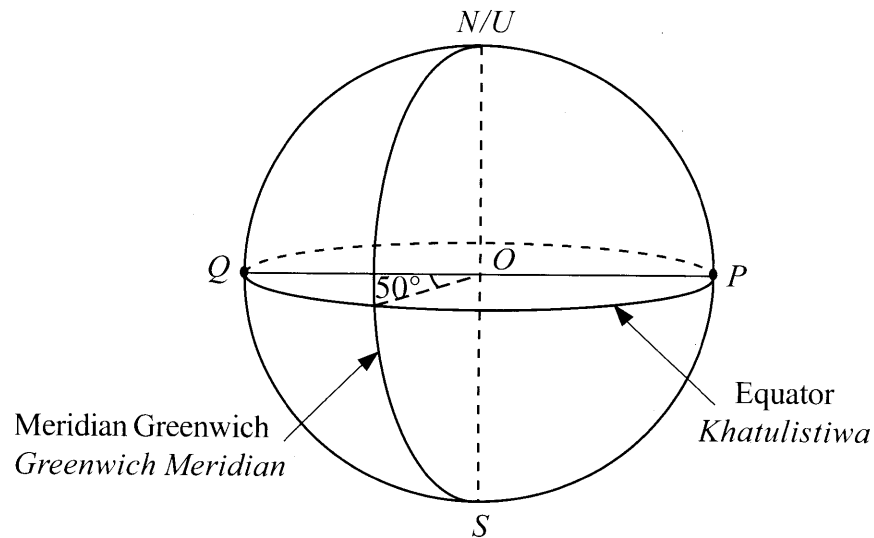


Diagram 11
Rajah 11

Find the longitude of point P .

Cari longitud titik P .

- A $50^\circ E$
 $50^\circ T$
- B $50^\circ W$
 $50^\circ B$
- C $130^\circ E$
 $130^\circ T$
- D $130^\circ W$
 $130^\circ B$

19 $(p-q)(p+q)+p(p-q)=$

A $2p^2 - q^2 - q$

B $2p^2 - q^2 - pq$

C $2p^2 - q^2 + pq$

D $2p^2 + q^2 - pq$

20 Express $\frac{2nm}{p} \times \frac{pq+pm}{nm^2}$ as a single fraction in its simplest form.

Ungkapkan $\frac{2nm}{p} \times \frac{pq+pm}{nm^2}$ sebagai satu pecahan tunggal dalam bentuk termudah.

A $2(q+1)$

B $2(q+p)$

C $\frac{2q+pm}{m}$

D $\frac{2q+2m}{m}$

21 Given $p = 5q - r$, express q in terms of p and r .

Diberi $p = 5q - r$, ungkapkan q dalam sebutan p dan r .

A $q = \frac{p+r}{5}$

B $q = \frac{p-r}{5}$

C $q = \frac{p}{5} + r$

D $q = \frac{p}{5} - r$

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

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

A $\frac{1}{4}$

B $\frac{3}{4}$

C $\frac{7}{9}$

D $\frac{7}{8}$

23 $\frac{b^2}{3a^2} =$

A $3(ab)^{-2}$

B $3a^{-2}b^2$

C $\frac{(ab)^{-2}}{3}$

D $\frac{a^{-2}b^2}{3}$

24 Simplify:

Ringkaskan:

$$\frac{m^{\frac{3}{4}} \times \sqrt{m}}{m^{\frac{1}{4}}}$$

A m

B m^5

C $m^{\frac{3}{2}}$

D $m^{\frac{5}{2}}$

25 List all the integers x that satisfy the linear inequalities $3 - 4x < 15$.

Senaraikan semua integer x yang memuaskan ketaksamaan linear $3 - 4x < 15$.

A $-4, -5, -6, \dots$

B $-3, -4, -5, \dots$

C $-3, -2, -1, \dots$

D $-2, -1, 0, \dots$

26 Find the solution for $-3x \leq 2(x+10)$.

Cari penyelesaian bagi $-3x \leq 2(x+10)$.

A $x \leq -2$

B $x \geq -2$


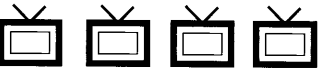
C $x \leq -4$

D $x \geq -4$

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- 27 Diagram 12 is a pictogram showing the number of televisions produced by a factory in January and February. The number of televisions produced in March and April are not shown.

Rajah 12 ialah piktogram yang menunjukkan bilangan televisyen yang dihasilkan oleh sebuah kilang dalam bulan Januari dan Februari. Bilangan televisyen yang dihasilkan dalam bulan Mac dan April tidak ditunjukkan.

January <i>Januari</i>	
February <i>Februari</i>	
March <i>Mac</i>	
April <i>April</i>	



Represents 250 televisions

Mewakili 250 televisyen

Diagram 12

Rajah 12

The number of televisions produced in January and March are in the ratio 2 : 3. The number of televisions produced in April was two times the number of televisions produced in February.

Calculate the total number of televisions produced in March and April.

Bilangan televisyen yang dihasilkan dalam bulan Januari dan Mac adalah dalam nisbah 2 : 3. Bilangan televisyen yang dihasilkan dalam bulan April adalah dua kali bilangan televisyen yang dihasilkan dalam bulan Februari.

Hitung jumlah bilangan televisyen yang dihasilkan dalam bulan Mac dan April.

- A 2750
- B 3000
- C 4250
- D 6750

- 28 Diagram 13 is a pie chart showing the expenditure of a family in a month. The expenditure on rental is $\frac{3}{4}$ of the expenditure on transportation.

Rajah 13 ialah carta pai yang menunjukkan perbelanjaan bagi satu keluarga dalam sebulan. Perbelanjaan untuk sewaan adalah $\frac{3}{4}$ daripada perbelanjaan pengangkutan.

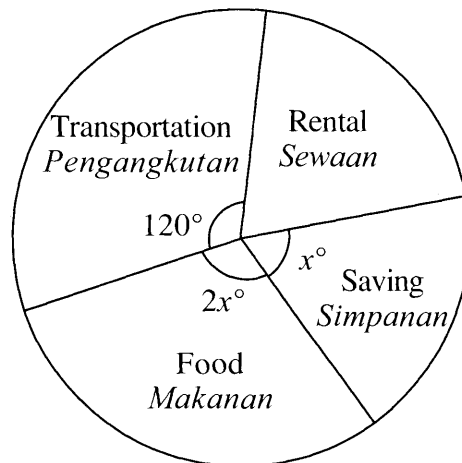


Diagram 13
Rajah 13

If the family saves RM450.00 every month, find how much they spend on rental.

Jika keluarga ini menyimpan RM450.00 setiap bulan, cari perbelanjaannya bagi sewaan.

- A RM810.00
- B RM337.50
- C RM250.00
- D RM112.50

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29 Diagram 14 is a bar chart showing the distribution of heights of 40 students.

Rajah 14 ialah carta palang yang menunjukkan taburan ketinggian bagi 40 murid.

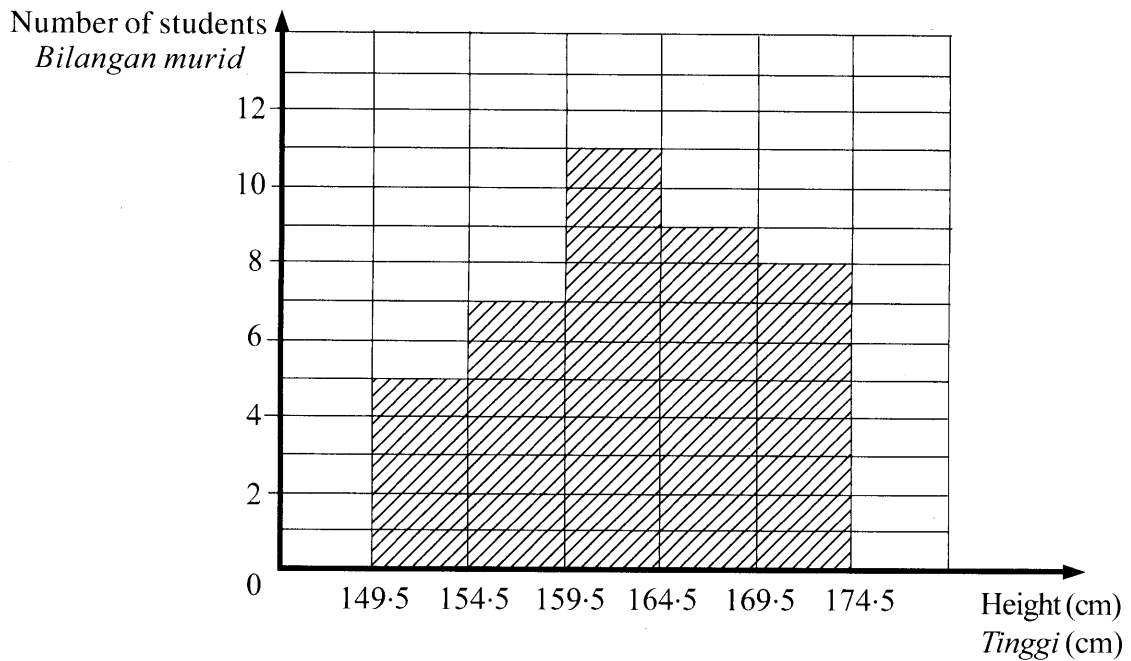


Diagram 14
Rajah 14

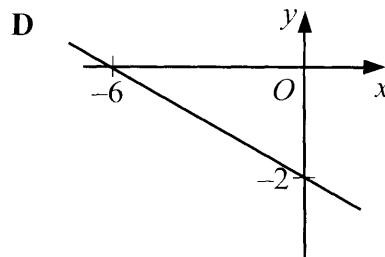
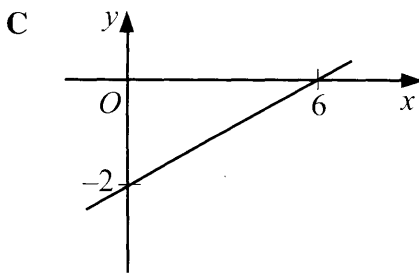
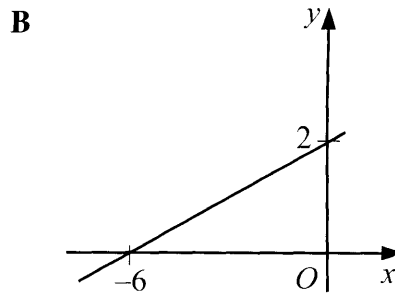
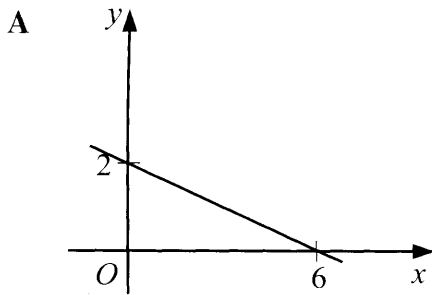
Find the mean height, in cm, of a student.

Hitung min ketinggian, dalam cm, bagi seorang murid.

- A 160.5
- B 162.0
- C 163.0
- D 165.5

30 Which graph represents $3y = -x + 6$?

Graf manakah yang mewakili $3y = -x + 6$?



31 Diagram 15 is a Venn diagram showing the number of elements in the universal set, ξ , set K, set L and set M.

Rajah 15 ialah gambar rajah Venn yang menunjukkan bilangan unsur dalam set semesta, ξ , set K, set L dan set M.

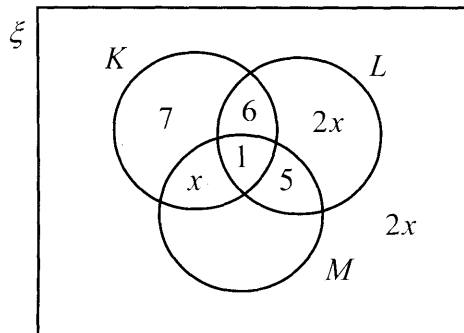


Diagram 15
Rajah 15

Given $n(L) = n(K \cup M)$, find $n(\xi)$.

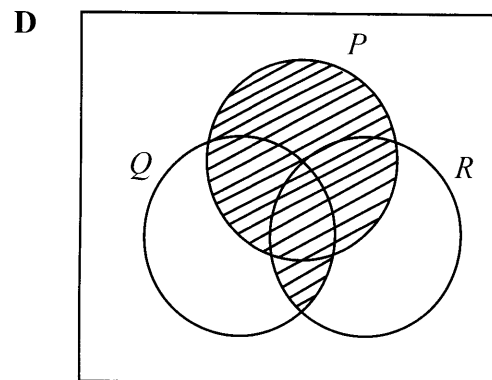
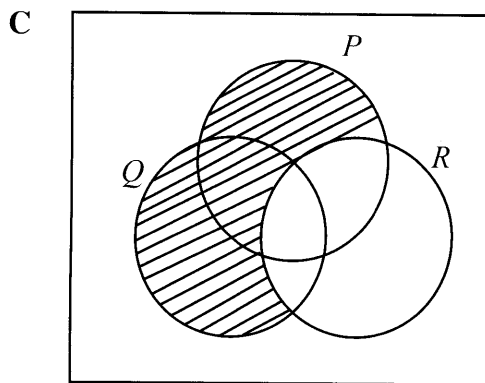
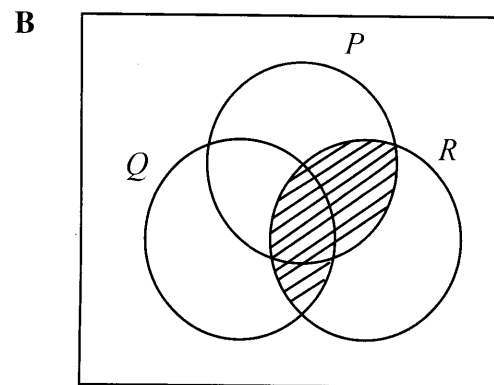
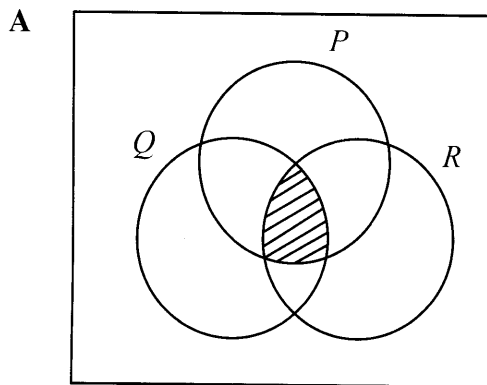
Diberi $n(L) = n(K \cup M)$, cari $n(\xi)$.

- A 37
- B 40
- C 49
- D 54

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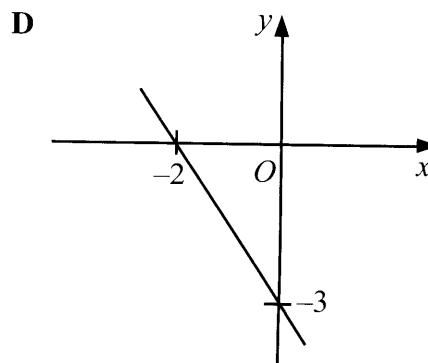
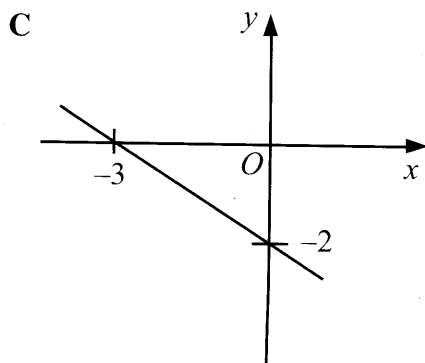
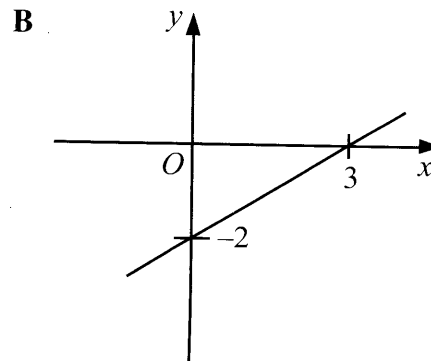
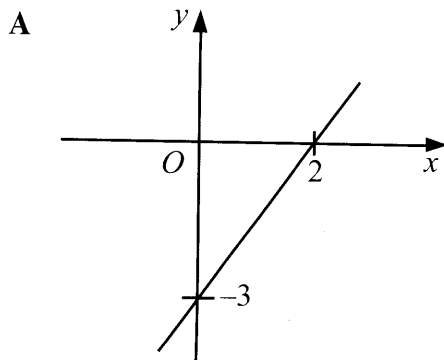
32 Which Venn diagram represents the set $P \cup Q \cap R$?

Gambar rajah Venn manakah yang mewakili set $P \cup Q \cap R$?



- 33 Which graph shows a straight line with a gradient of $\frac{2}{3}$?

Graf manakah yang menunjukkan garis lurus dengan kecerunan $\frac{2}{3}$?



- 34 Determine the y -intercept of the straight line $5x - 4y = 20$.
Tentukan pintasan- y bagi garis lurus $5x - 4y = 20$.

- A 5
B 4
C -4
D -5

35 Diagram 16 shows a set of 11 number cards.

Rajah 16 menunjukkan satu set 11 kad nombor.



Diagram 16
Rajah 16

A card is chosen at random.

Find the probability that a prime number card is chosen.

Satu kad dipilih secara rawak.

Cari kebarangkalian bahawa satu kad nombor perdana dipilih.

A $\frac{4}{11}$

B $\frac{6}{11}$

C $\frac{7}{11}$

D $\frac{8}{11}$

- 36 A bag contains 5 red marbles, 3 yellow marbles and a number of white marbles. A marble is picked at random from the bag.

Given that the probability of picking a yellow marble is $\frac{1}{6}$, find the probability of picking a marble that is **not** white.

Sebuah beg mengandungi 5 guli merah, 3 guli kuning dan beberapa guli putih. Sebiji guli dipilih secara rawak daripada beg itu.

*Diberi kebarangkalian memilih guli kuning ialah $\frac{1}{6}$, cari kebarangkalian memilih sebiji guli yang **bukan** putih.*

A $\frac{4}{13}$

B $\frac{8}{23}$

C $\frac{4}{9}$

D $\frac{8}{11}$

- 37 It is given that y varies directly with x and $y = 24$ when $x = 3$.

Express y in terms of x .

Diberi bahawa y berubah secara langsung dengan x dan $y = 24$ apabila $x = 3$.

Ungkapkan y dalam sebutan x .

A $y = 8x$

B $y = \frac{x}{8}$

C $y = 72x$

D $y = \frac{x}{72}$

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- 38 It is given that p varies inversely as the square of q and $p = 2$ when $q = 4$.
Calculate the value of p when $q = 9$.

Diberi bahawa p berubah secara songsang dengan kuasa dua q dan $p = 2$ apabila $q = 4$.

Hitung nilai p apabila $q = 9$.

- A $\frac{32}{81}$
- B $\frac{4}{3}$
- C $\frac{8}{9}$
- D $\frac{81}{8}$

- 39 Given:

Diberi:

$$\begin{pmatrix} 9 & 0 \\ -5 & 4 \end{pmatrix} + \frac{1}{2} \begin{pmatrix} 8 & -10 \\ 6 & n \end{pmatrix} = \begin{pmatrix} 13 & -5 \\ -2 & 1 \end{pmatrix}.$$

Find the value of n .

Cari nilai n .

- A 6
- B 2
- C -2
- D -6

$$40 \begin{pmatrix} 2 & 4 \\ 0 & -2 \end{pmatrix} \begin{pmatrix} 2 & -3 \\ 1 & 2 \end{pmatrix} =$$

$$\text{A} \begin{pmatrix} 8 & 2 \\ -2 & -4 \end{pmatrix}$$

$$\text{B} \begin{pmatrix} 0 & -14 \\ 2 & 4 \end{pmatrix}$$

$$\text{C} \begin{pmatrix} 4 & -12 \\ 0 & -4 \end{pmatrix}$$

$$\text{D} \begin{pmatrix} 4 & 4 \\ 0 & -4 \end{pmatrix}$$

END OF QUESTION PAPER
KERTAS SOALAN TAMAT

ANSWER (Mathematics P1 2012)

1 D 2 C 3 B 4 D 5 C 6 B 7 A 8 B 9 D 10 C

11 B 12 D 13 C 14 A 15 C 16 A 17 A 18 C 19 B 20 D

21 A 22 D 23 D 24 A 25 D 26 D 27 C 28 A 29 C 30 A

31 C 32 B 33 B 34 D 35 B 36 C 37 A 38 A 39 D 40 A