Mathematics
July / Aug 2012
1 1/4 hours

Name : ..... Class : .....

JABATAN PELAJARAN NEGERI TERENGGANU

PEPERIKSAAN PERCUBAAN
PENILAIAN MENENGAH RENDAH 2012

MATHEMATICS

PAPER 1

One Hour Fifteen Minutes

DO NOT OPEN THIS TEST PAPER UNTIL YOU ARE TOLD TO DO SO

INFORMATION FOR CANDIDATES

1. *This question paper consists of 40 questions.*
2. *Answer **all** questions.*
3. *Answer each question by blackening the correct space on the answer sheet.*
4. *Blacken only **one** space for each question.*
5. *If you wish to change your answer, erase the blackened mark that you have done. Then blacken the space for the new answer.*
6. *The diagram in the question provided are not drawn to scale unless stated.*
7. *A list of formulae is provided on page 2 and 3.*
8. *You may use a non-programmable scientific calculator.*

Disediakan oleh:
Guru AKRAM Terengganu

Dengan kerjasama:
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Dibiayai oleh:
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TERENGGANU NEGERI ANJUNG ILMU

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This questions paper consists of 23 printed pages.

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MATHEMATICS 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. Distance = $\sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$
5. Midpoint
   $(x,y) = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$
6. Average speed = $\frac{\text{distance travelled}}{\text{time taken}}$
7. Mean = $\frac{\text{sum of data}}{\text{number of data}}$
8. Pythagoras Theorem
   $c^2 = a^2 + b^2$

SHAPE AND SPACE

1. Area of rectangle = length x width
2. Area of triangle = $\frac{1}{2}$ x base x height
3. Area of parallelogram = base x height
4. Area of trapezium
   = $\frac{1}{2}$ x (sum of parallel sides) x height
5. Circumference of circle = $\pi d = 2\pi r$
6. Area of circle = πr^2
7. Curved surface area of cylinder
   $= 2\pi rh$
8. Surface area of sphere = $4\pi r^2$
9. Volume of right prism
   = cross sectional area x length
10. Volume of cuboid
    = length x width x height
11. Volume of cylinder = $\pi r^2 h$
12. Volume of cone = $\frac{1}{3}\pi r^2 h$
13. Volume of sphere = $\frac{4}{3}\pi r^3$
14. Volume of pyramid
    = $\frac{1}{3}$ x base area x height
15. Sum of interior angles of polygon
    $= (n-2) \times 180°$
16. $\frac{\text{arc length}}{\text{circumference of circle}} = \frac{\text{angle subtended at centre}}{360^0}$
17. $\frac{\text{area of sector}}{\text{area of circle}} = \frac{\text{angle subtended at centre}}{360^0}$
18. Scale factor, $k = \frac{P'A'}{PA}$
19. Area of image = k^2 x area of object

RUMUS MATEMATIK

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

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. Jarak $= \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$
5. Titik Tengah
   $(x,y) = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$
6. Purata laju $= \frac{\text{jarak yang dilalui}}{\text{masa yang diambil}}$
7. Min $= \frac{\text{hasil tambah nilai data}}{\text{bilangan data}}$
8. Teorem Pithagoras
   $c^2 = a^2 + b^2$

BENTUK DAN RUANG

1. Luas segiempat tepat = panjang x lebar
2. Luas segitiga $= \frac{1}{2}$ x tapak x tinggi
3. Luas segiempat selari = tapak x tinggi
4. Luas trapezium
   $= \frac{1}{2}$ x (hasil tambah dua sisi selari) x tinggi
5. Lilitan bulatan $= \pi d = 2\pi j$
6. Luas Bulatan $= \pi j^2$
7. Luas permukaan melengkung silinder
   $= 2\pi jt$
8. Luas permukaan sfera $= 4\pi j^2$
9. Isipadu prisma tegak
   = luas keratan rentas x panjang
10. Isipadu kuboid = panjang x lebar x tinggi
11. Isipadu silinder $= \pi j^2 t$
12. Isipadu kon $= \frac{1}{3}\pi j^2 t$
13. Isipadu sfera $= \frac{4}{3}\pi j^3$
14. Isipadu peramid tegak
    $= \frac{1}{3}$ x luas tapak x tinggi
15. Hasil tambah sudut pedalaman poligon
    $= (n-2) \times 180^\circ$
16. $\frac{\text{panjang lengkok}}{\text{lilitan bulatan}} = \frac{\text{sudut pusat}}{360^0}$
17. $\frac{\text{luas sektor}}{\text{luas bulatan}} = \frac{\text{sudut pusat}}{360^0}$
18. Faktor skala, $k = \frac{P'A'}{PA}$
19. Luas Imej $= k^2$ x luas objek

1 Which digit has the correct place values in both numbers?
Digit manakah yang mempunyai nilai tempat yang betul dalam kedua-dua nombor itu?

	Digit	Place value *Nilai tempat*	
		3 459 867	3 865 497
A	4	Hundred thousands *Ratus ribu*	Thousands *Ribu*
B	5	Thousands *Ribu*	Hundreds *Ratus*
C	6	Tens *Puluh*	Ten thousands *Puluh ribu*
D	8	Thousands *Ribu*	Hundred thousands *Ratus ribu*

2 Diagram 1 shows a sequence of prime numbers.
Rajah 1 menunjukkan suatu urutan nombor perdana.

23, 29, x, y, 41, 43

Diagram 1

Find the value of $y - x$.
Cari nilai $y - x$.

A 2

B 4

C 6

D 8

3 State the first two common multiples of 2, 4 and 6.
Nyatakan dua gandaan sepunya pertama bagi 2, 4 dan 6.

A 12 and 18

B 12 and 24

C 16 and 24

D 18 and 24

4 Table 1 shows the mass of three items bought by Diana.
Jadual 1 menunjukkan jisim bagi tiga item yang dibeli oleh Diana.

Item	Mass per unit *Jisim per unit*	Number of units *Bilangan unit*
Chicken *Ayam*	2 kg 75 g	2
Meat *Daging*	3.5 kg	3
Fish *Ikan*	325 g	6

Table 1

Calculate the total mass, in kg, of all the items that she bought.
Hitung jumlah jisim, dalam kg, semua item yang telah dibelinya.

A 35.50

B 34.15

C 17.95

D 16.60

5 A bus departed from Kuala Terengganu to Johor Bharu. The journey took 5 hours 30 minutes. The bus arrived in Johor Bharu at 4.00 a.m.
At what time, in the 24-hour syatem, the bus left Kuala Terengganu.
Sebuah bas bertolak dari Kuala Terengganu ke Johor Bharu. Perjalanan itu mengambil masa 5 jam 30 minit. Bas itu tiba di Johor Bahru pada pukul 4.00 a.m Pukul berapakah, dalam sistem 24 jam, bas bertolak dari Kuala Terengganu.

A 0130

B 1030

C 2130

D 2230

6 Which of the following fractions has a value less than $\frac{5}{6}$?
Antara pecahan berikut, yang manakah mempunyai nilai lebih kecil daripada $\frac{5}{6}$?

A $\frac{4}{5}$

B $\frac{6}{7}$

C $\frac{7}{8}$

D $\frac{8}{9}$

7 Fiza has 15 m of cloth. She uses it to make 6 curtains and 4 tablecloth. Each curtain requires 1.45 m of cloth and each tablecloth requires 95 cm of cloth.
What is the length, in m, of the remaining cloth?
Fiza ada 15 m kain. Dia menggunakan kain itu untuk membuat 6 helai langsir dan 4 helai alas meja. Setiap helai langsir memerlukan 1.45 m kain dan setiap helai alas meja memerlukan 95 cm kain.
Berapakah panjang, dalam m, baki kain itu?

A 8.7

B 3.7

C 2.5

D 2.4

8 Faizal bought a house for RM160 000. He sold the house for RM200 000. Calculate the profit percentage.
Faizal membeli sebuah rumah dengan harga RM160 000. Dia menjual rumah tersebut dengan harga RM 200 000.
Hitungkan peratus keuntungan harga rumah itu.

A 20

B 25

C 30

D 40

9 In Diagram 2, *KLM is a* straight line.
Dalam Rajah 2, KLM ialah garis lurus.

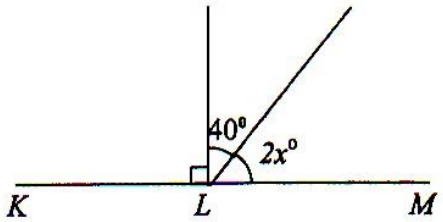


Diagram 2

Find the value of x.
Cari nilai x.

A 60

B 30

C 25

D 20

10 In Diagram 3, *PQR* is a straight line
Dalam Rajah 3, PQR ialah garis lurus.

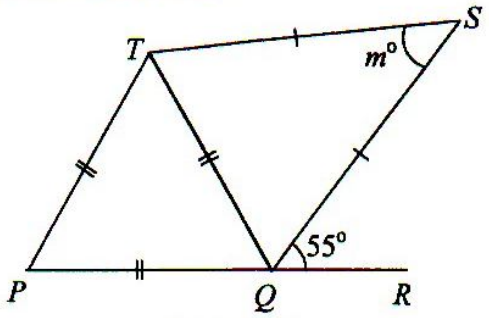


Diagram 3

Find the value of m.
Cari nilai m.

A 35

B 50

C 60

D 65

11 In Diagram 4, *JNL* and *KNM* are straight lines.
Dalam Rajah 4, JNL dan KNM ialah garis lurus.

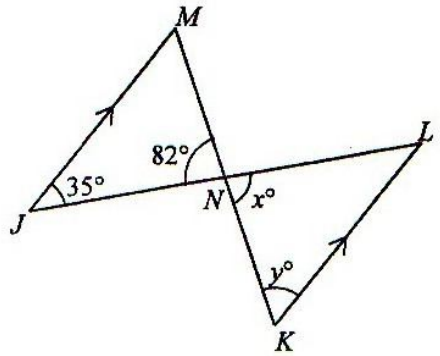


Diagram 4

Find the value of $x - y$.
Cari nilai $x - y$.

A 19

B 28

C 47

D 63

12 Diagram 5 shows a pentagon *PQRST* and *PQV* is a straight line.
Rajah 5 menunjukkan sebuah pentagon PQRST dan PQV ialah garis lurus.

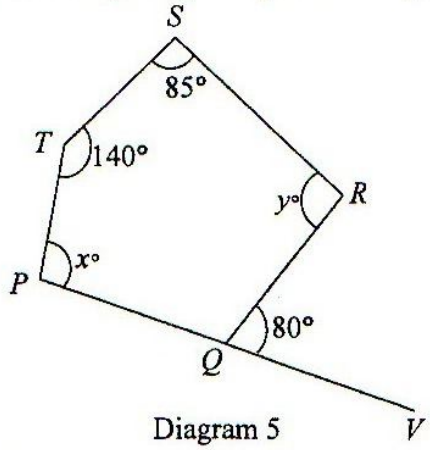


Diagram 5

The value of $x + y$ is
Nilai bagi $x + y$ ialah

A 315

B 235

C 215

D 135

13 In Diagram 6, *PQRSTU* is a hexagon.
Dalam Rajah 6, PQRSTU ialah sebuah heksagon.

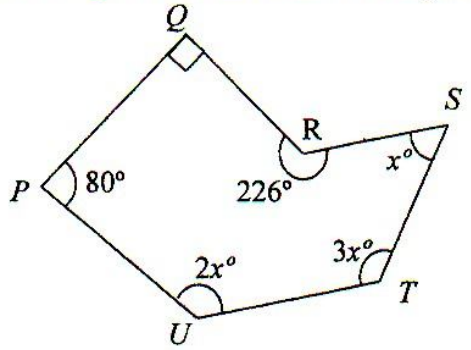


Diagram 6

Find the value of x.
Cari nilai x.

A 69

B 64

C 54

D 51

14 Diagram 7 shows a rectangle, *JKLM*. *P*, *Q* and *R* are midpoints of *JK*, *JL* and *KL* respectively.
Rajah 7 menunjukkan sebuah segi empat tepat, JKLM. P, Q dan R masing-masing adalah titik tengah bagi JK, JL dan KL.

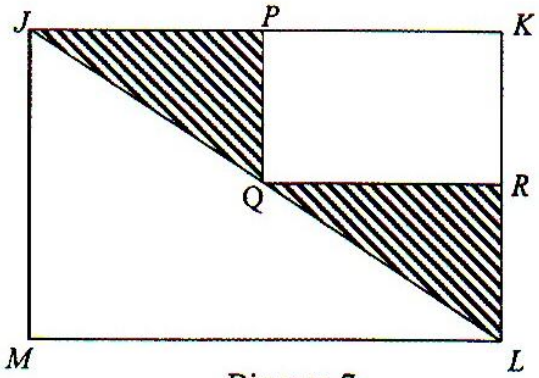


Diagram 7

Find the percentage of the area of the shaded region of the whole diagram.
Cari peratusan luas kawasan yang berlorek daripada seluruh rajah.

A 25

B 50

C 75

D 80

15 Diagram 8 shows a cone with radius of its base is 7 cm.
Rajah 8 menunjukkan sebuah kon dengan jejari tapaknya ialah 7 cm.

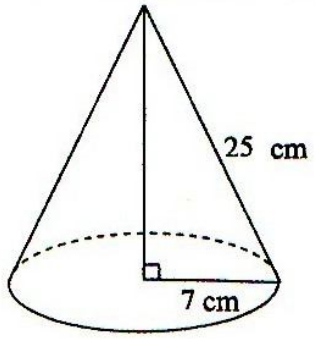


Diagram 8

Calculate the volume, in cm^3, of the cone.
Kirakan isipadu, dalam cm^3, kon tersebut.

$\left[Use\ \pi = \frac{22}{7}\right]$

A 528

B 550

C 1225

D 1232

16 Diagram 9 is drawn on a Cartesian plane. The point $J(0, 6)$, $K(-4, 3)$ and $L(x, 3)$ form an isosceles triangle. KML is a straight line.
Rajah 9 dilukis pada suatu satah Cartesan. Titik-titik $J(0, 6)$, $K(-4, 3)$ dan $L(x, 3)$ membentuk sebuah segi tiga sama kaki. KML ialah garis lurus.

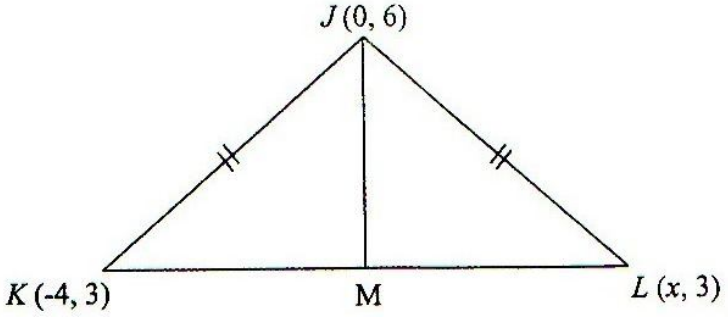


Diagram 9

The value of x is
Nilai x ialah

A 0

B 3

C 4

D 6

17 In Diagram 10, *RSTU* is a parallelogram and *RSV* is a straight line.
Dalam Rajah 10, RSTU ialah sebuah segi empat selari dan RSV ialah garis lurus.

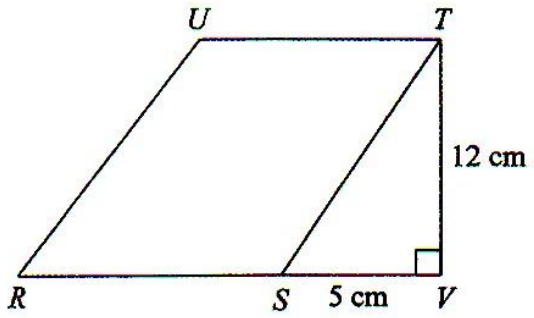


Diagram 10

Given $UT = 2SV$, calculate the area, in cm^2, of the whole diagram.
Diberi $UT = 2SV$, hitung luas, dalam cm^2, seluruh rajah itu.

A 120

B 150

C 185

D 216

18 In Diagram 11, *O* is the centre of the circle with radius 13 cm.
Dalam Rajah 11, O ialah pusat bagi bulatan berjejari 13 cm.

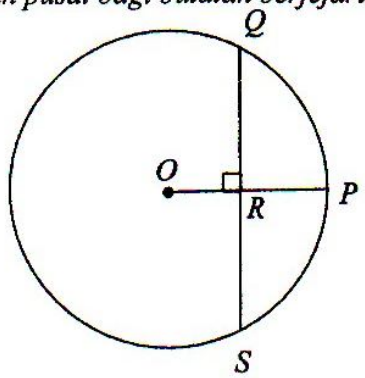


Diagram 11

Given that $PR = 8$ cm.
Find the length, in cm, of *RS*.
Diberi $PR = 8$ cm.
Cari panjang, dalam cm, bagi RS.

A 5

B 12

C 21

D 24

19 Mamat and Jusoh received RM112 and divided among them according to the ratio of $5 : x$. Mamat received RM40.
Find the value of x.
Mamat dan Jusoh menerima RM112 dan dibahagikan antara mereka mengikut nisbah $5 : x$. Mamat memerima RM40.
Cari nilai bagi x.

A 8

B 9

C 12

D 18

20 In Diagram 12, *PQRS* and *PVUT* are rectangles. *M, N, T* and *V* are midpoints of *QR*, *RS*, *PS* and *PQ* respectively.
Dalam Rajah 12, PQSR dan PVUT adalah segi empat tepat. M, N, T dan V masing-masing adalah titik tengah QR, RS, PS dan PQ.

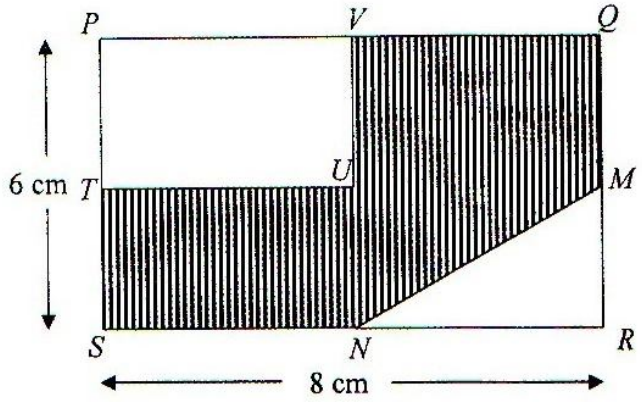


Diagram 12

Calculate the perimeter, in cm, of the shaded region.
Hitung perimeter, dalam cm, kawasan yang berlorek.

A 26

B 28

C 33

D 40

21 In Diagram 13, *PQRS* is a rectangle and *PTS* is an equilateral triangle. *M* is the midpoint of *PQ*.
Dalam Rajah 13, PQRS ialah segi empat tepat dan PTS ialah segi tiga sama sisi. M ialah titik tengah PQ.

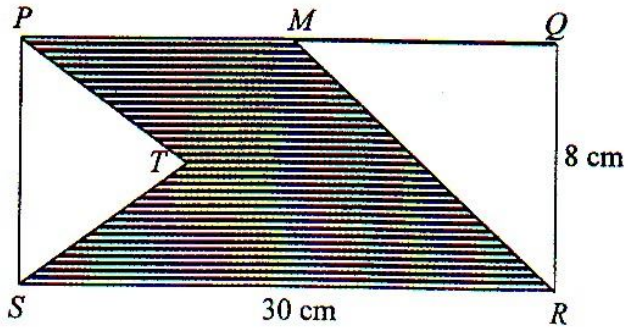


Diagram 13

Find the perimeter, in cm, of the shaded region.
Cari perimeter, dalam cm, kawasan berlorek.

A 71

B 74

C 78

D 81

22 Table 2 shows the mass of old newspapers collected by a group of students during club activities.
Jadual 2 menunjukkan jisim suratkhabar lama yang dikumpul oleh sekumpulan murid semasa aktiviti kelab.

Mass of old newspapers (kg) *Jisim suratkhabar lama (kg)*	5	10	15	20	25
Number of students *Bilangan murid*	1	4	7	6	2

Table 2

Calculate the percentage number of students who collected more than the mode.
Hitung peratusan bilangan murid yang mengumpul lebih dari jisim mod.

A 40

B 60

C 75

D 80

23 In Diagram 14, O is the centre of the circle.
Dalam Rajah 14, O ialah pusat bulatan.

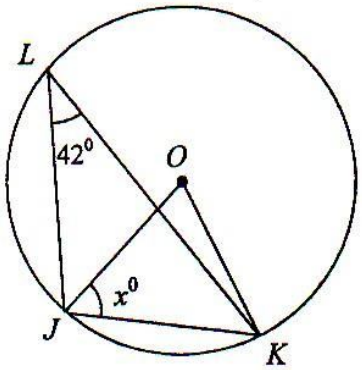


Diagram 14

Find the value of x.
Cari nilai x.

A 21

B 48

C 84

D 96

24 Diagram 15 shows a circle with centre O.
Rajah 15 menunjukkan sebuah bulatan berpusat O.

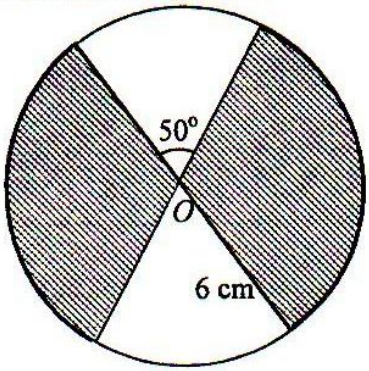


Diagram 15

Calculate the area, in cm^2, of the shaded region.
Hitung luas, dalam cm^2, kawasan yang berlorek.

A 26π

B 13π

C 10π

D 5π

25 Diagram 16 shows a circle with centre O. Given that arc PQ is equal to arc PT.
Rajah 16 menunjukkan sebuah bulatan dengan pusat O. Diberi panjang lengkuk PQ adalah sama dengan lengkuk PT.

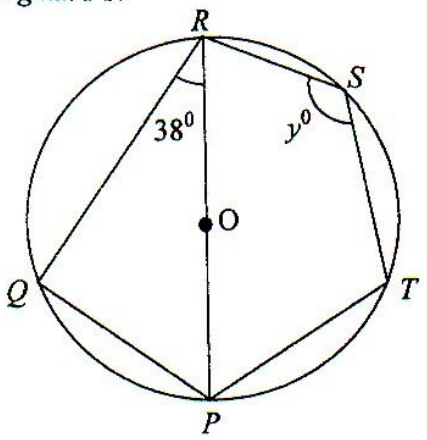


Diagram 16

The value of y is
Nilai bagi y ialah

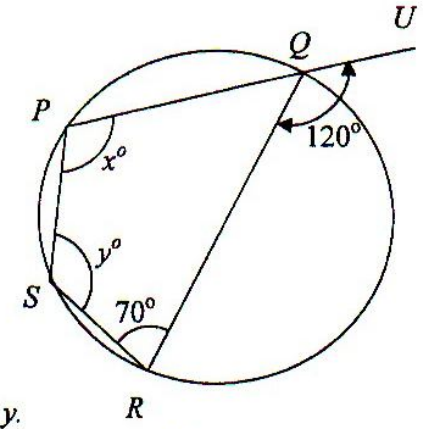
A 52

B 76

C 104

D 128

26 In Diagram 17, $PQRS$ is a cyclic quadrilateral. PQU is a straight line.
Dalam Rajah 17, PQRS ialah sebuah sisi empat kitaran. PQU ialah garis lurus.



Find the value of $x + y$.
Cari nilai x + y.

Diagram 17

A 130

B 170

C 190

D 230

27 It is given that $p : q = 2 : 3$ and $q : r = 4 : 5$.
Find the ratio of $p : q : r$.
Diberi bahawa $p : q = 2 : 3$ dan $q : r = 4 : 5$.
Cari nisbah bagi $p : q : r$.

A 2 : 3 : 5

B 2 : 4 : 5

C 8 : 12 : 15

D 8 : 12 : 20

28 Table 3 shows the time taken by four bus *J, K, L* and *M* on a journey.
Jadual 3 menunjukkan masa yang diambil oleh bas J, K, L dan M dalam satu perjalanan.

Bus *Bas*	Distance (km) *Jarak (km)*	Time (h) *Masa (j)*
J	170	1.5
K	130	2.25
L	210	2.5
M	300	3.25

Table 3

Which bus that move below an average speed of 90 km/h.
Bas yang manakah dipandu di bawah halaju purata 90 km/j.

A K and L

B J and K

C L and M

D J and M

29 Diagram 18 shows a right pyramid with a square base.
Rajah 18 menunjukkan sebuah piramid dengan tapak segiempat sama.

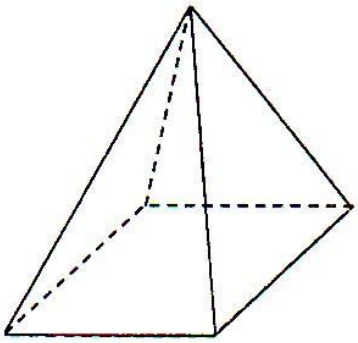
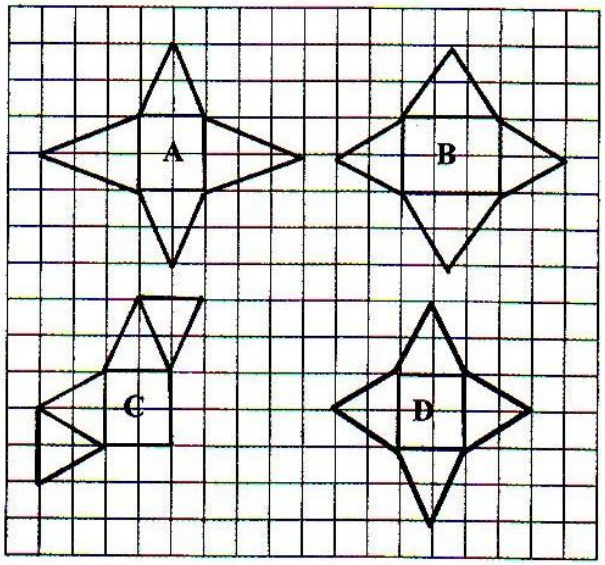


Diagram 18

Which of the following is a net for the pyramid?
Yang manakah di antara berikut adalah bentangan bagi piramid itu.



30 Solve the linear inequality $3 - x < 4x + 18$.
Selesaikan ketaksamaan linear $3 - x < 4x + 18$.

A $x > -3$

B $x < -3$

C $x > 3$

D $x < 3$

31 Diagram 19 is drawn on a grid of equal squares.
Rajah 19 dilukis pada grid segi empat sama yang sama besar.

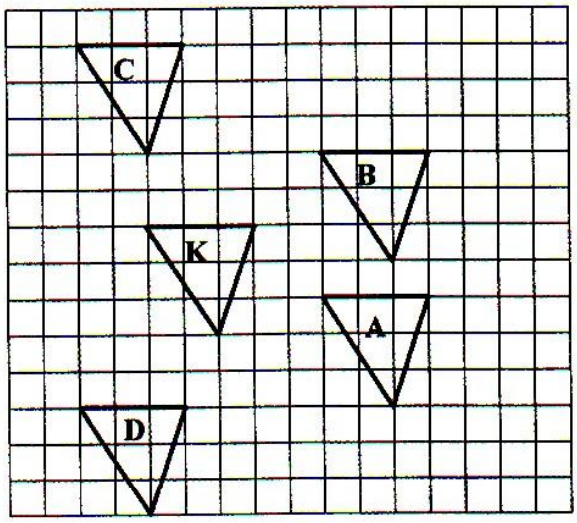


Diagram 19

Which of the triangle **A**, **B**, **C** or **D** is the image of K under translation $\begin{pmatrix} 5 \\ -2 \end{pmatrix}$?

*Antara segitiga **A, B, C** dan **D** yang manakah imej K di bawah translasi* $\begin{pmatrix} 5 \\ -2 \end{pmatrix}$?

32 Table 4 shows the number of mineral bottles collected by a group of students in a recycling campaign.
Jadual 4 menunjukkan bilangan botol mineral yang dikumpul oleh sekumpulan murid dalam suatu kempen kitar semula.

Number of Mineral Bottles *Bilangan botol mineral*	5	10	15	20	25
Frequency *Kekerapan*	6	12	10	8	4

Table 4

Calculate the mean number of mineral bottles collected by students.
Hitung min bagi bilangan botol mineral yang dikumpul oleh pelajar tersebut.

A 10

B 12

C 14

D 23

33 Diagram 20 is a bar chart which shows three games played by a group of students.
Rajah 20 ialah carta palang yang menunjukkan tiga permainan yang disertai oleh sekumpulan murid.

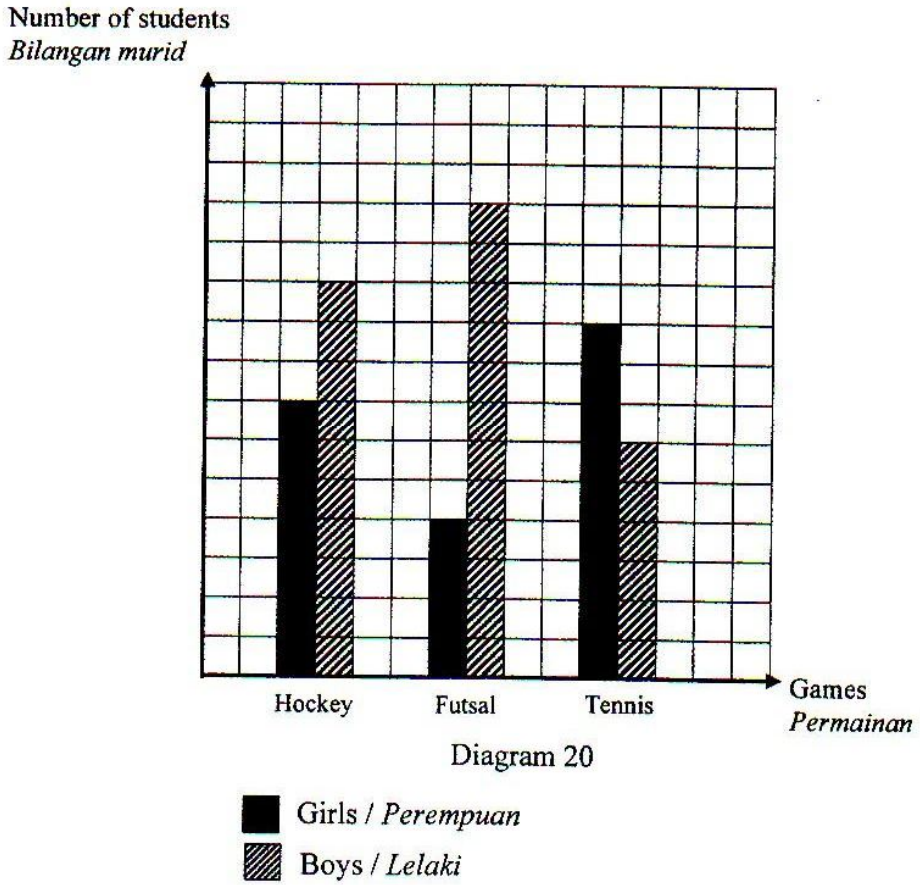


Diagram 20

The total number of boys and girls played hockey and futsal is 165.
Calculate the total number of girls played tennis.
Jumlah murid lelaki dan perempuan yang menyertai pasukan hoki dan futsal ialah 165 orang.
Hitung jumlah murid perempuan yang menyertai pasukan tenis.

A 30

B 45

C 60

D 75

34 Table 5 shows how students travel to school.
Jadual 5 menunjukkan cara murid datang ke sekolah.

Mean of Transportation *Cara ke sekolah*	Number of students *Bilangan Murid*
Walking *Jalan kaki*	36
Motorcycle *Motosikal*	18
Car *Kereta*	24
Bus Bas	30

Table 5

Diagram 21

All the information in Table 5 is represented by the pie chart in Diagram 21.
Calculate the value of x.
Semua maklumat dalam Jadual 5 diwakili oleh carta pai dalam Rajah 21.
Hitung nilai x.

A 60

B 80

C 100

D 120

35 Find the distance between $P(1, 2)$ and $Q(6, 14)$.
Cari jarak antara P(1, 2) dan Q(6, 14).

A 5

B 8

C 10

D 13

36 Diagram 22 shows a circle with centre O.
Rajah 22 menunjukkan sebuah bulatan berpusat O.

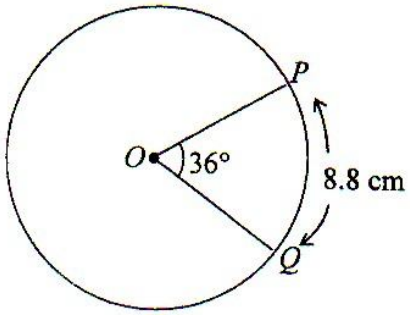


Diagram 22

The length of the minor arc PQ is 8.8 cm.
Calculate the radius, in cm, of the circle.
Panjang lengkok minor PQ ialah 8.8 cm.
Hitung jejari, dalam cm, bulatan itu.

$\left[Use\ \pi = \frac{22}{7}\right]$

A 10

B 14

C 18

D 28

37 Given that $3x - y = -12$ and $2x + y = 2$.
Calculate the value of x.
Diberi $3x - y = -12$ dan $2x + y = 2$.
Hitung nilai x.

A -10

B -2

C 6

D 14

38 Given a function $y = 2x^2 - 3x$, calculate the value of y when $x = 3$.
Diberi suatu fungsi $y = 2x^2 - 3x$, hitungkan nilai y apabila x = 3.

A 6

B 9

C 12

D 15

39 Diagram 23 shows a square *PQRS* drawn on a square grid of side 1 unit.
Rajah 23 menunjukkan sebuah segi empat sama PQRS yang dilukis pada grid segi empat sama yang bersisi 1 unit.

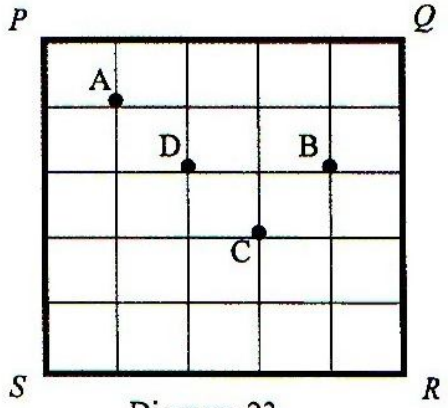
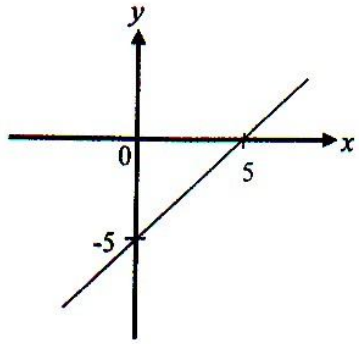


Diagram 23

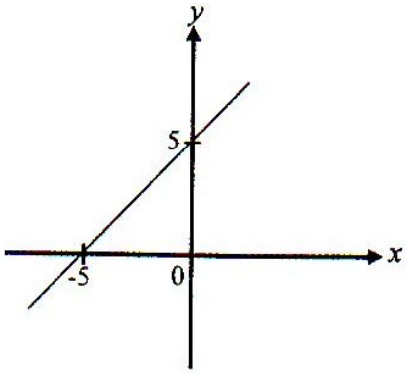
X and *Y* are moving points in the square.
X is always equidistant from *QP* and *PS*.
Y is always 3 units from *SR*.
Which of the points **A**, **B**, **C** or **D**, is the intersection of locus *X* and locus *Y*?
X dan Y ialah titik-titik yang bergerak di dalam segi empat sama itu.
X sentiasa berjarak sama dari QP dan PS.
Y sentiasa berjarak 3 unit dari SR.
*Antara titik-titik **A, B, C** dan **D**, yang manakah persilangan lokus X dan lokus Y?*

40 Which of the following graphs represents $y = -x - 5$?
Antara graf berikut, yang manakah mewakili $y = -x - 5$?

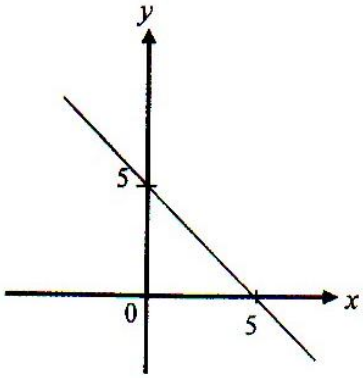
A



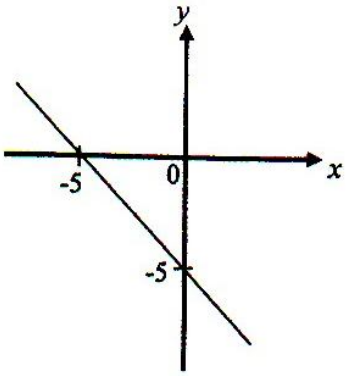
B



C



D



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JABATAN PELAJARAN NEGERI TERENGGANU
MARKING SCHEME MATHEMATICS FORM 3

PEPERIKSAAN PERCUBAAN PMR 2012

OBJECTIVE ANSWERS

SUBJECT CODE	**50**
SUBJECT	**MATHEMATICS**
PAPER	**1**

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