

MATHEMATICAL FORMULAE
RUMUS MATEMATIK

The following formulae may be 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 $a^m \times a^n = a^{m+n}$

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

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

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

5 Midpoint / Titik tengah

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

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

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

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

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

8 Pythagoras Theorem / Teorem Pithagoras

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

**SHAPES AND SPACE
BENTUK DAN RUANG**

- 1 Area of rectangle = length \times width
Luas segi empat tepat = panjang \times lebar

- 2 Area of triangle = $\frac{1}{2}$ \times base \times height
Luas segitiga = $\frac{1}{2}$ \times tapak \times tinggi

- 3 Area of parallelogram = base \times height
Luas segiempat selari = tapak \times tinggi

- 4 Area of trapezium = $\frac{1}{2}$ \times sum of parallel sides \times height
Luas trapezium = $\frac{1}{2}$ \times hasil tambah dua sisi selari \times tinggi

- 5 Circumference of circle = $\pi d = 2\pi r$
Lilitan bulatan = $\pi d = 2\pi j$

- 6 Area of circle = πr^2
Luas bulatan = πj^2

- 7 Curved surface area of cylinder = $2\pi rh$
Luas permukaan melengkung silinder = $2\pi jt$

- 8 Surface area of sphere = $4\pi r^2$
Luas permukaan sfera = $4\pi j^2$

- 9 Volume of right prism = cross sectional area \times length
Isipadu prisma tegak = luas keratan rentas \times panjang

- 10 Volume of cuboid = length \times width \times height
Isipadu kuboid = panjang \times lebar \times tinggi

- 11 Volume of cylinder = $\pi r^2 h$
Isipadu silinder = $\pi j^2 t$

- 12 Volume of cone = $\frac{1}{3} \pi r^2 h$
Isipadu kon = $\frac{1}{3} \pi j^2 t$

SULIT

4

13 Volume of sphere = $\frac{4}{3} \pi r^3$

Isipadu sfera = $\frac{4}{3} \pi j^3$

14 Volume of right pyramid = $\frac{1}{3} \times \text{base area} \times \text{height}$

Isipadu pyramid tegak = $\frac{1}{3} \times \text{luas tapak} \times \text{tinggi}$

15 Sum interior angles of a polygon = $(n-2) \times 180^\circ$

Hasil tambah sudut pedalaman poligon = $(n-2) \times 180^\circ$

16
$$\frac{\text{Arc length}}{\text{Circumference of circle}} = \frac{\text{Angle subtended at centre}}{360^\circ}$$

$$\frac{\text{Panjang lengkok}}{\text{Lilitan bulatan}} = \frac{\text{Sudut pusat}}{360^\circ}$$

17
$$\frac{\text{Area of sector}}{\text{Area of circle}} = \frac{\text{Angle subtended at centre}}{360^\circ}$$

$$\frac{\text{Luas sektor}}{\text{Luas bulatan}} = \frac{\text{Sudut pusat}}{360^\circ}$$

18 Scale factor / *Faktor skala*, $k = \frac{PA'}{PA}$

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

SULIT

5

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HALAMAN KOSONG**

SULIT

6

- 1 Which of the following numbers when rounded off to the nearest thousand does not become 423,000 ?

Antara nombor berikut, yang manakah apabila dibundarkan kepada ribu yang hampir tidak menjadi 423,000 ?

- A 422 508
 B 422 705
 C 423 409
 D 423 504

- 2 Diagram 1 shows part of a number line.

Rajah 1 menunjukkan garis nombor.

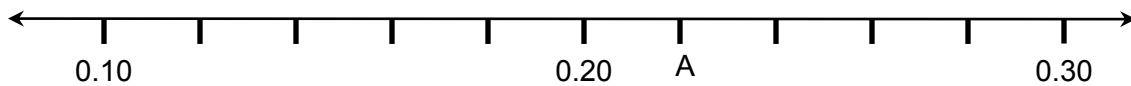


Diagram 1

Rajah 1

Calculate the value of A

Hitung nilai A

- A $\frac{11}{50}$
 B $\frac{21}{50}$
 C $\frac{11}{100}$
 D $\frac{21}{100}$

SULIT

7

3 State $\frac{3}{10} + \frac{7}{1000} + \frac{1}{100}$ as a decimal.

Nyatakan $\frac{3}{10} + \frac{7}{1000} + \frac{1}{100}$ sebagai nombor perpuluhan.

- A 0.173
- B 0.317
- C 0.713
- D 0.731

4 Fractions $\frac{1}{4}$, m , $\frac{1}{15}$ is arranged in a certain order. Which of the following is **not** a possible value of m ?

Pecahan $\frac{1}{4}$, m , $\frac{1}{15}$ disusun mengikut suatu urutan. Antara berikut yang manakah bukan nilai yang mungkin untuk m ?

- A $\frac{6}{25}$
- B $\frac{7}{30}$
- C $\frac{9}{40}$
- D $\frac{13}{50}$

SULIT

8

- 5 Diagram 2 shows a television been offered for sale at a discount.

Rajah 2 menunjukkan sebuah televisyen yang ditawarkan untuk dijual pada harga diskaun.

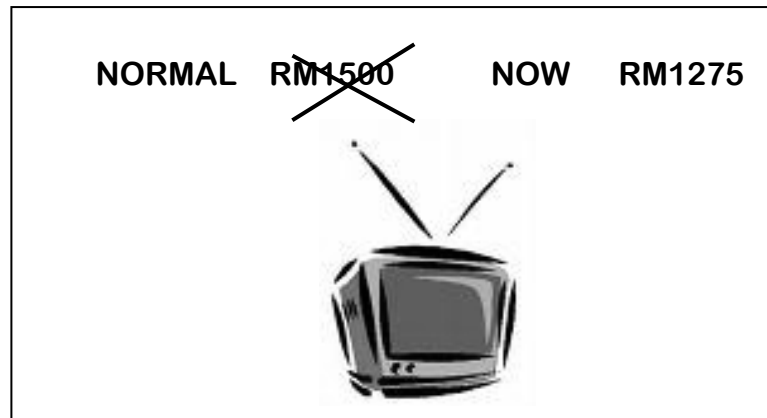


Diagram 2

Rajah 2

Find the percentage of the discount offered.

Cari peratus diskaun yang ditawarkan.

- A** 15 %
B 25%
C 30%
D 85%
- 6 Mrs. Anita bought 6 kg 300 g of flour. She wanted to make 5 loaves of bread using 0.6 kg of flour each and 45 muffins using 0.05 kg of flour each. How much flour, in kg, will be left ?
Puan Anita membeli 6 kg 300 g tepung. Dia hendak membuat 5 buku roti dengan menggunakan 0.6 kg tepung setiap buku dan 45 muffin dia menggunakan 0.05 kg tepung setiap muffin. Berapa banyak tepung, dalam kg, yang tinggal ?
- A** 1.05
B 3.00
C 3.30
D 5.25

SULIT

9

- 7 Abdul Rahim jogs 8 km 40 m on Monday and 7.86 km on Tuesday.
Find the total distance, in km, that Abdul Rahim jogs in the two days ?
Abdul Rahim berjoging 8 km 40 m pada hari Isnin dan 7.86 km pada hari Selasa.
Cari jumlah jarak, dalam km, Abdul Rahim berjoging dalam tempoh 2 hari ?
- A 15.09
B 15.126
C 15.9
D 16.26
- 8 Diagram 3 shows two quadrilaterals, M and N are drawn on a square grid.
Rajah 3 menunjukkan dua sisi empat, M dan N yang dilukis pada satu grid segi empat sama.

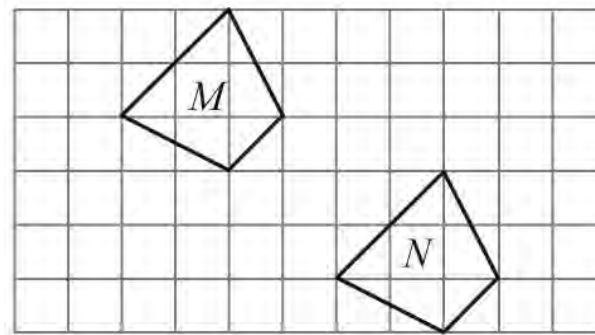


Diagram 3
Rajah 3

Given that quadrilateral N is the image of quadrilateral M under a translation, find the translation.
Diberi sisi empat N ialah imej bagi sisi empat M di bawah satu translasi, cari translasi itu.

- A $\begin{pmatrix} -3 \\ 4 \end{pmatrix}$
B $\begin{pmatrix} 4 \\ -3 \end{pmatrix}$
C $\begin{pmatrix} 3 \\ -5 \end{pmatrix}$
D $\begin{pmatrix} 5 \\ -3 \end{pmatrix}$

SULIT

10

9 Diagram 4 shows a pentagon PQRST, QRV and STU are straight lines.

Rajah 4 menunjukkan sebuah pentagon PQRST, QRV dan STU adalah garis lurus.

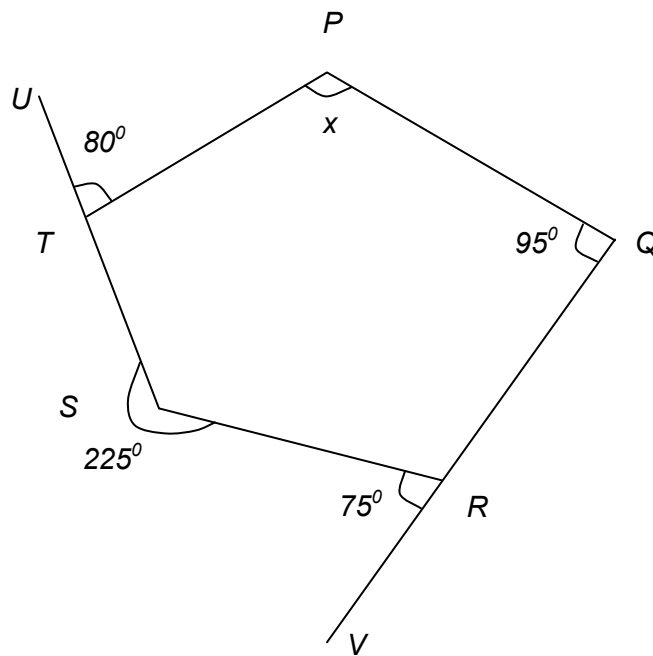


Diagram 4

Rajah 4

Find the value of x .

Cari nilai x .

- A 105°
- B 115°
- C 135°
- D 145°

SULIT

11

- 10 In Diagram 5, S , T , U , V and W are five vertices of a regular polygon.
Dalam Rajah 5, S , T , U , V dan W ialah lima bucu bagi sebuah poligon sekata.

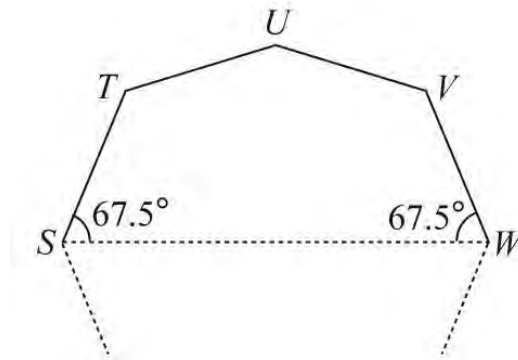


Diagram 5

Rajah 5

Determine the number of sides of the regular polygon.

Tentukan bilangan sisi bagi poligon sekata itu.

- A 6
- B 7
- C 8
- D 9

SULIT

12

- 11 Diagram 6 shows a regular pentagon with centre O .
Rajah 6 menunjukkan pentagon sekata berpusat O .

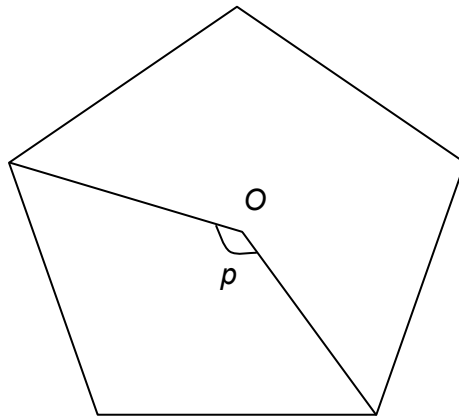


Diagram 6
Rajah 6

Find the value of p .

Cari nilai p .

- A** 102°
B 108°
C 126°
D 144°
- 12 Determine the number of triangles formed in a nonagon.
 Tentukan bilangan segitiga yang terbentuk di dalam nonagon.
- A** 2
B 5
C 7
D 9

SULIT

13

13 In Diagram 7, $PQOR$ is a straight line and $PQOS$ is a right-angled triangle.

Dalam Rajah 7, $PQOR$ ialah garis lurus dan $PQOS$ ialah sebuah segi tiga bersudut tegak.

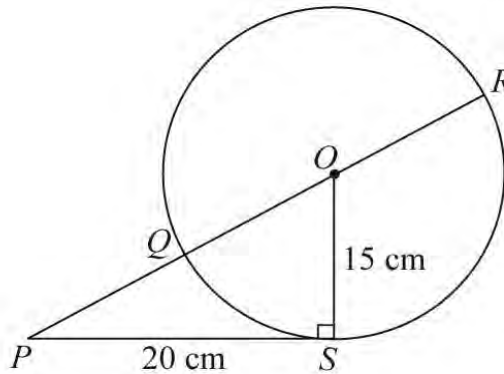


Diagram 7

Rajah 7

Find the length, in cm, of PQ .

Cari panjang, dalam cm, bagi PQ

- A 5
- B 10
- C 13
- D 25

14 In Diagram 8, KN is the diameter of the circle.

Dalam Rajah 8, KN ialah diameter bulatan.

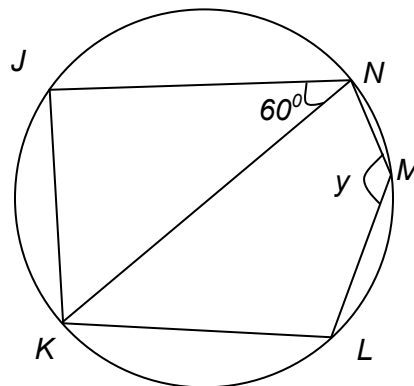


Diagram 8

Rajah 8

Given that the length of arcs JN and LN are equal, find the value of y .

Diberi panjang lengkok JN dan LN adalah sama, cari nilai y .

- A 100°
- B 120°
- C 135°
- D 150°

SULIT

14

- 15 Diagram 9 shows a rectangle $EFGH$. K is the midpoint of GH .
Rajah 9 menunjukkan segi empat tepat $EFGH$. K ialah titik tengah GH .

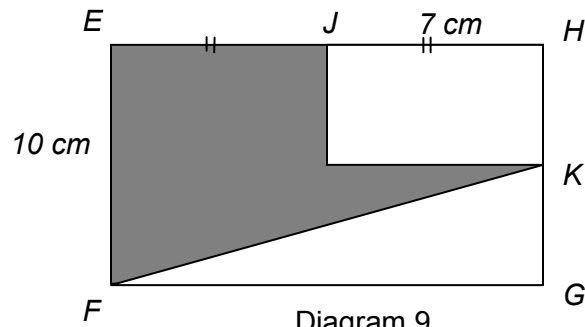


Diagram 9

Rajah 9

The area of the shaded region, in cm^2 , is

Luas kawasan yang berlorek, dalam cm^2 , ialah

- A 70
- B 92.5
- C 105
- D 127.5

SULIT

15

- 16 Diagram 10, shows a right pyramid with a rectangular base. Given that $VE = 13$ cm, and $VF = 15$ cm.

Rajah 10, menunjukkan piramid tegak dengan tapak segi empat tepat. Diberi $VE = 13$ cm, dan $VF = 15$ cm.

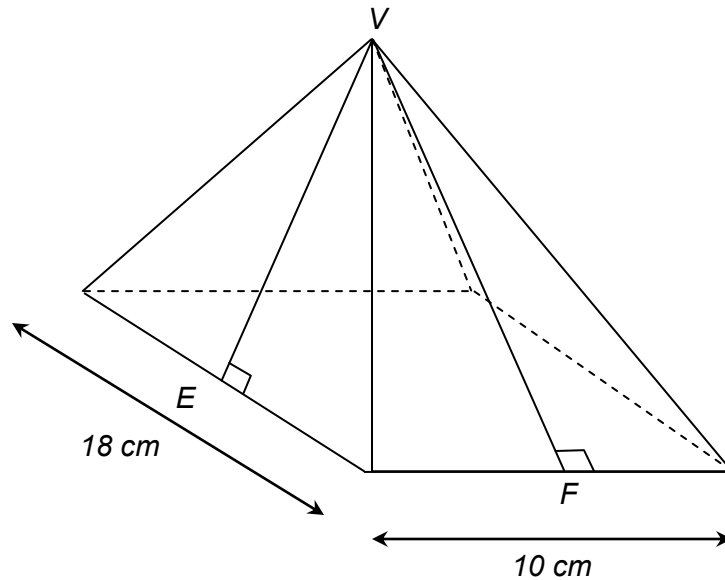


Diagram 10
Rajah 10

Which of the following shows the common steps to calculate the total surface area of the pyramid ?

Yang manakah menunjukkan langkah asas untuk mengira jumlah luas permukaan sebuah piramid ?

- A $2(18 \times 13) + (18 \times 10)$
- B $(\frac{1}{2} \times 18 \times 13) + 2(18 \times 10)$
- C $(\frac{1}{2} \times 10 \times 15) + 2(18 \times 10)$
- D $2(\frac{1}{2} \times 10 \times 15) + 2(\frac{1}{2} \times 18 \times 13) + (18 \times 10)$

- 17 Diagram 11 shows a cylinder. The shaded region which is a hemisphere is removed from the cylinder.

Rajah 11 menunjukkan sebuah silinder. Kawasan berlorek itu merupakan sebuah hemisfera yang telah dikeluarkan daripada silinder itu.

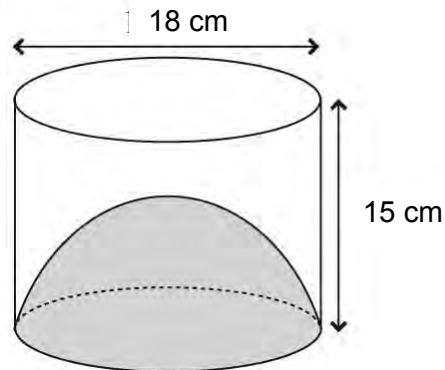


Diagram 11

Rajah 11

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

Cari isi padu bentuk yang tinggal dalam cm^3 .

- A 486π
 B 729π
 C 798π
 D 960π
- 18 A train leaves Station P and heading to Station Q with the speed of 80 kmh^{-1} at 11.30 a.m. If the train arrives at Station Q at 2.00 p.m., determine the distance, in km, between the two stations.

Sebuah keretapi meninggalkan Stesen P dan menuju ke Stesen Q dengan kelajuan 80 km per jam pada 11.30 a.m. Jika keretapi tiba di Stesen Q pada 2.00 p.m, tentukan jarak, dalam km, antara dua stesen itu.

- A 32
 B 40
 C 160
 D 200

SULIT

17

- 19 Diagram 12 shows a right cone with a slant height of 10 cm.
Rajah 12 menunjukkan kon tegak dengan tinggi sendeng 10cm.

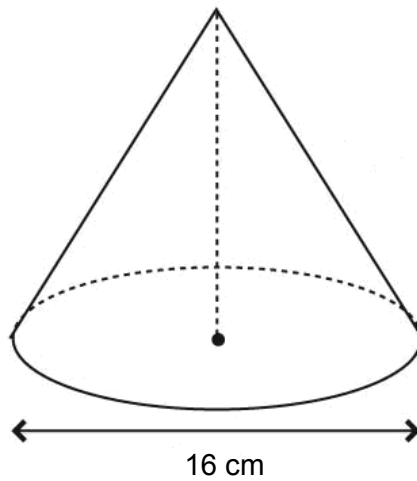


Diagram 12

Rajah 12

Find the volume of the cone in cm^3 . (Use $\pi = \frac{22}{7}$)

Cari isipadu kon dalam cm^3 . (Gunakan $\pi = \frac{22}{7}$)

- A** $402\frac{2}{7}$
- B** $670\frac{10}{21}$
- C** $1206\frac{6}{7}$
- D** $2681\frac{19}{21}$

20 In Diagram 13, O is the centre of the circle whereas RST and USV are straight lines.

Dalam Rajah 13,, O ialah pusat bulatan RST dan USV ialah garis lurus.

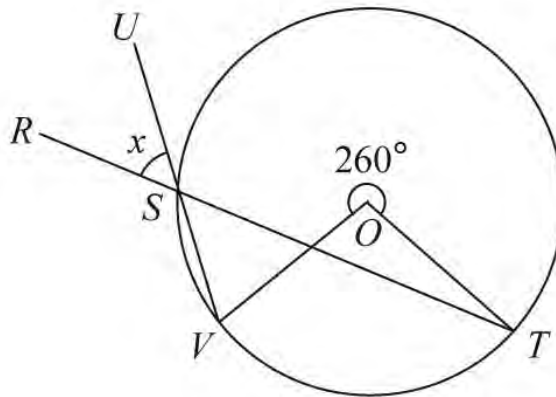


Diagram 13

Rajah 13

Determine the value of x .

Tentukan nilai x .

- A 40°
- B 50°
- C 80°
- D 100°

SULIT

19

21 Diagram 14 shows a circle with centre O .

Rajah 14 menunjukkan sebuah bulatan berpusat O .

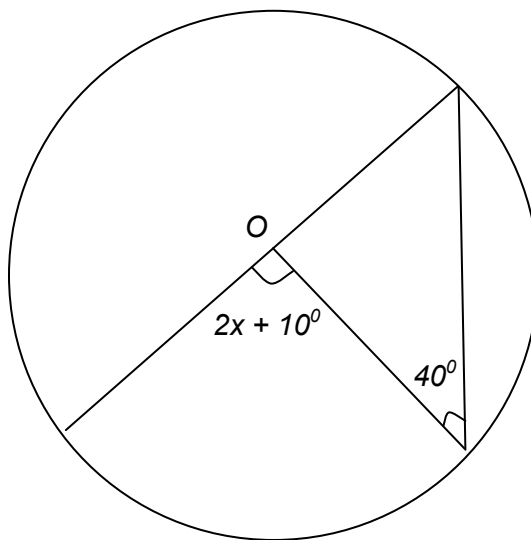


Diagram 14
Rajah 14

Find the value of x .

Cari nilai x .

- A 15°
- B 20°
- C 30°
- D 35°

SULIT

20

- 22 In Diagram 15, $PQRS$ and $PSTU$ are cyclic quadrilaterals. PS is the diameter of the circle.
 Dalam Rajah 15, $PQRS$ dan $PSTU$ ialah sisi empat kitaran. PS ialah diameter bulatan itu.

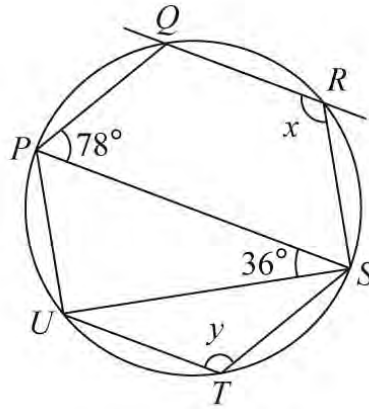


Diagram 15

Rajah 15

Find the value of $y - x$.

Cari nilai $y - x$.

- A 24°
- B 42°
- C 54°
- D 102°

SULIT

21

23 Diagram 16, PRST is a rectangle and PQR is a semicircle with centre O.

Rajah 16, PRST ialah segi empat tepat dan PQR ialah semibulatan berpusat O.

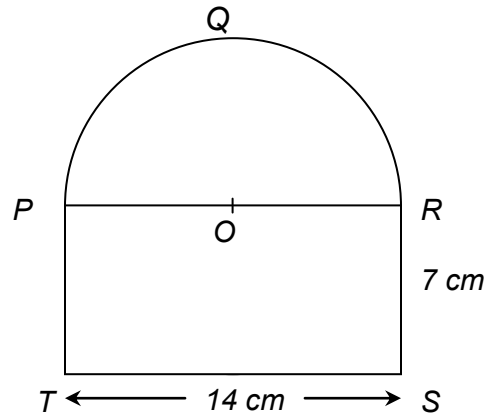


Diagram 16

Rajah 16

Find the perimeter, in cm, of the whole diagram. (Use $\pi = \frac{22}{7}$)

Cari perimeter, dalam cm, seluruh rajah itu. (Guna $\pi = \frac{22}{7}$)

- A 39
- B 50
- C 53
- D 64

SULIT

22

24 Diagram 17, JKR is a straight line.

Dalam Rajah 17, JKR ialah satu garis lurus.

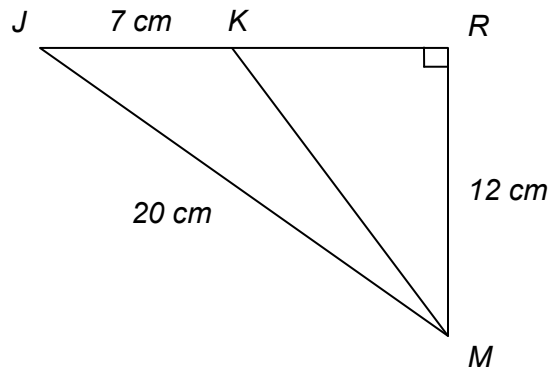


Diagram 17

Rajah 17

The length, in cm, of KR is

Panjang KR , dalam cm, ialah

- A 5
- B 7
- C 8
- D 9

25 Diagram 18 shows two parallel straight lines, JKL and MN .

Rajah 18 menunjukkan dua garis lurus yang selari, JKL dan MN .

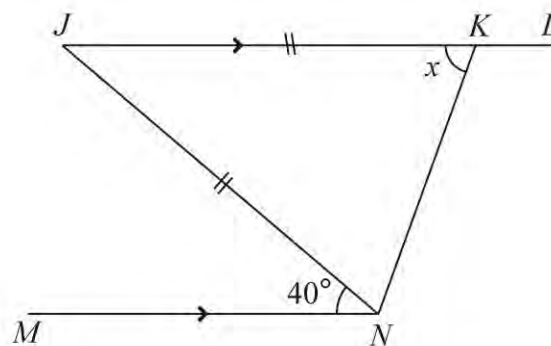


Diagram 18

Rajah 18

The value of x is

Nilai x ialah

- A 40°
- B 70°
- C 80°
- D 100°

- 26 Mrs. Haslina has RM600. She spent all the money to buy x calculators and y pens. A calculator costs RM45 and a pen costs RM20.

The linear equation in x and y is

Puan Haslina mempunyai RM600. Dia membelanjakan kesemua duitnya untuk membeli x kalkulator dan y pen. Kos sebuah kalkulator ialah RM45 dan kos pen ialah RM20.

Persamaan linear x dan y ialah

- A** $9x + 2y = 600$
B $9x + 4y = 120$
C $45x + 4y = 600$
D $45x + 10y = 300$
- 27 Which of the following inequalities have the solutions of $x = 4, 5, \dots$. Given that x are integers.

Antara ketaksamaan yang berikut, manakah penyelesaian bagi $x = 4, 5, \dots$. Diberi x ialah integer.

I $3x > 12$

II $x - 2 \geq 2$

III $x + 3 > 6$

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

SULIT

24

28 Diagram 19 shows a straight line, LMN .

Rajah 19 menunjukkan satu garis lurus, LMN .

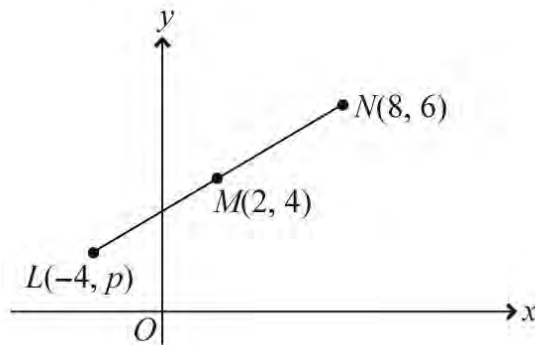


Diagram 19

Rajah 19

Given that M is the midpoint of LN , determine the value of p .

Diberi M ialah titik tengah LN , tentukan nilai p .

- A 1
- B 2
- C 3
- D 4

29 Diagram 20 shows a Cartesian plane.

Rajah 20 menunjukkan suatu satah Cartesian

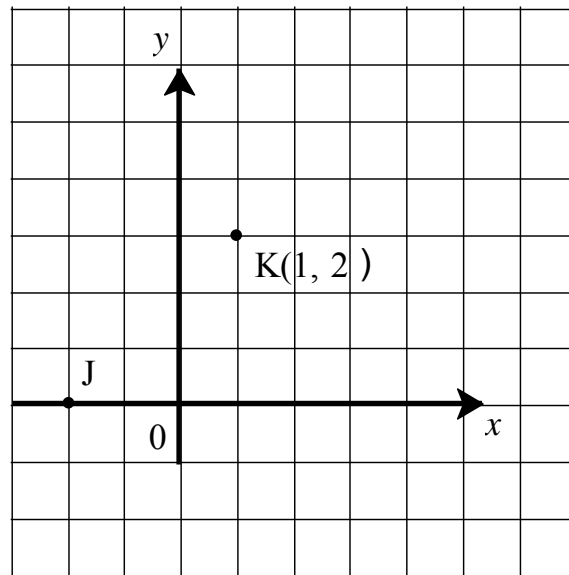


Diagram 20

Rajah 20

Given that $JK = KL$. The coordinate of point L is

Diberi bahawa $JK = KL$. Koordinat bagi titik L ialah

- A (-2, 4)
- B (0, 3)
- C (1, -1)
- D (4, 2)

30 The salaries of Halim, Ah Chong and Raju are in the ratio 4 : 5 : 9. The difference between Halim's salary and Ah Chong's salary is RM 200. Calculate Raju's salary.

Gaji Halim, Ah Chong dan Raju masing-masing mengikut nisbah 4 : 5 : 9. Beza antara gaji Halim dengan gaji Ah Chong ialah RM 200. Hitung gaji Raju.

- A RM 800
- B RM 1000
- C RM 1800
- D RM 3600

31 Diagram 21 shows a square.

Rajah 21 menunjukkan segi empat sama.

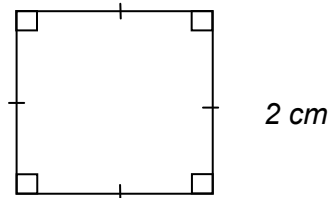


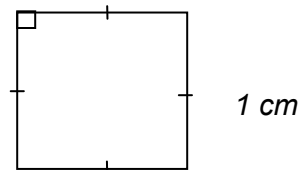
Diagram 21

Rajah 21

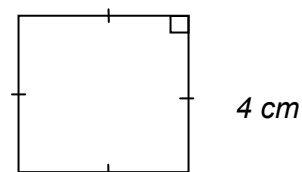
Which of the following is the scale drawing of the square drawn to a scale of $1 : \frac{1}{4}$?

Yang manakah menunjukkan lukisan berskala bagi segiempat sama yang dilukis dengan menggunakan skala $1 : \frac{1}{4}$?

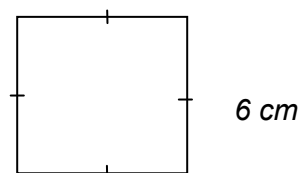
A



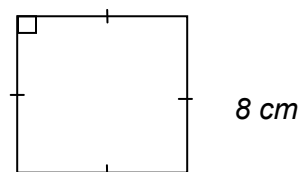
B



C



D



SULIT

27

32 Given that $x : y = 1 : 3$ and $y : z = 4 : 5$. Hence $x : y : z =$

Diberi $x : y = 1 : 3$ dan $y : z = 4 : 5$. Maka $x : y : z =$

- A 1 : 3 : 5
- B 1 : 12 : 5
- C 3 : 4 : 5
- D 4 : 12 : 15

33 Diagram 22 shows the number of students who passed their Mathematics tests.

Rajah 22 menunjukkan bilangan pelajar yang lulus dalam ujian Matematik

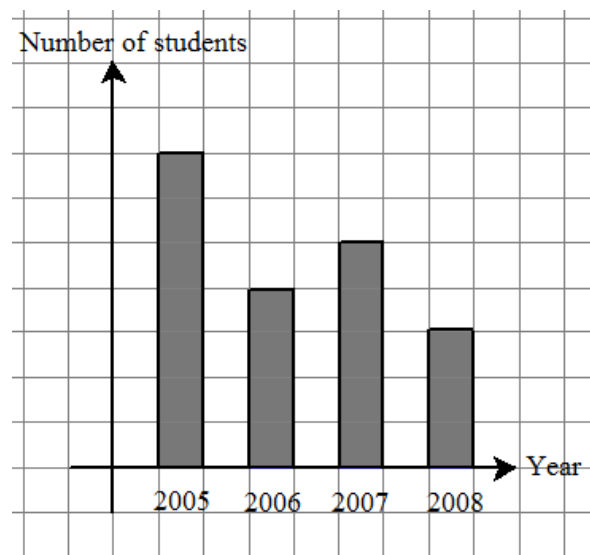


Diagram 22

Rajah 22

The difference between the highest number of students who passed their Mathematics test and the lowest is 32. Find the number of students who passed their Mathematics test in the year 2008.

Perbezaan antara bilangan tertinggi pelajar yang lulus ujian matematik dengan bilangan terendah ialah 32. Carikan bilangan pelajar yang lulus ujian Matematik dalam tahun 2008.

- A 15
- B 24
- C 28
- D 35


- 34 The Table 1 shows the model and number of cars sold.

Jadual 1 menunjukkan model dan bilangan kereta yang telah dijual.

Model of car <i>Model kereta</i>	Number of cars sold <i>Bilangan kereta dijual</i>
X	180
Y	120
Z	135

Table 1

Jadual 1

In a pictograph one symbol  represents 15 cars. How many symbols are required to represent the number of the most popular model of cars sold ?

Di dalam suatu piktograf satu simbol  mewakili 15 kereta. Berapakah bilangan simbol yang diperlukan untuk mewakili bilangan kereta paling popular yang telah dijual ?

- A** 10
B 11
C 12
D 13
- 35 The median of a set of data 4, 5, x , 4, 9, 3, 9 and 8 is 6. Find the value of x .
Median bagi suatu set data 4, 5, x , 4, 9, 3, 9 dan 8 ialah 6. Cari nilai bagi x .

- A** 5
B 6
C 7
D 8

- 36 Diagram 23 shows the number of cassettes produced by a factory in five months.
Rajah 23 menunjukkan bilangan kaset yang dikeluarkan oleh kilang dalam masa 5 bulan.

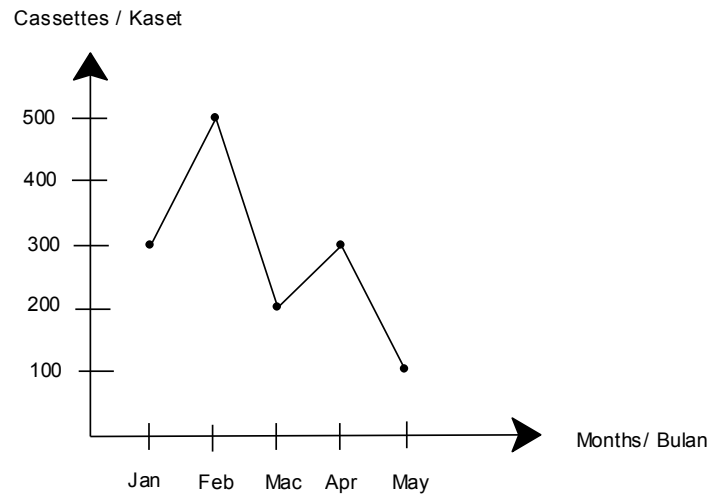


Diagram 23
Rajah 23

Find the mode

Cari mod

- A** 100
- B** 200
- C** 300
- D** 500

37 Table 2 shows the pocket money of a group of students in Class 3 Arif.

Jadual 2 menunjukkan wang saku bagi sekumpulan pelajar dalam Kelas 3 Arif.

Pocket money (RM) Wang saku (RM)	Number of students Bilangan pelajar
0	12
1	24
2	36
3	20
4	8

Table 2

Jadual 2

The mean of the pocket money is

Min wang saku ialah

- A** RM 1.88
- B** RM 2.36
- C** RM 2.45
- D** RM 3.12

SULIT

31

38 Diagram 24 shows a graph of function.

Rajah 24 menunjukkan suatu graf fungsi

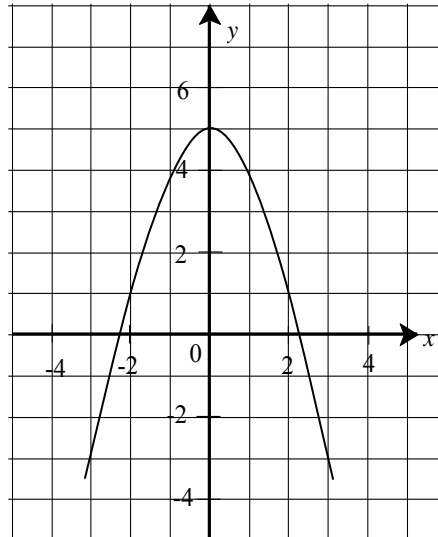


Diagram 24

Rajah 24

Based on the graph above, the values of x when $y = 1$ are

Berdasarkan graf di atas, nilai-nilai bagi x bila $y = 1$ ialah

- A -1 dan 1
- B -2 dan 2
- C -3 dan 3
- D -4 dan 4

39 Table 3 shows the values of variables x and y of a function.

Jadual 3 menunjukkan nilai-nilai pemboleh ubah x dan y bagi suatu fungsi.

x	-4	-1	2
y	-10	-1	8

Table 3

Jadual 3

Find the function that satisfies the variables x and y .

Cari fungsi yang memuaskan pemboleh ubah x dan y .

- A $y = x - 6$
- B $y = 2x - 2$
- C $y = 3x + 2$
- D $y = 7x + 6$

- 40 In the Diagram 25, PQ and RS are straight lines
 Dalam Rajah 25, PQ dan RS adalah garis lurus

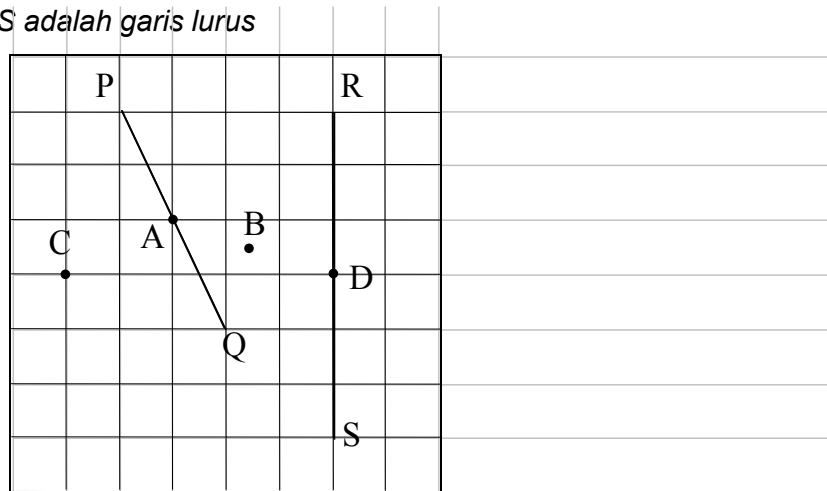


Diagram 25

Rajah 25

-15

-10

Which of the points **A**, **B**, **C** and **D** lies on both the perpendicular bisectors of PQ and RS?
 Antara titik-titik **A**, **B**, **C** dan **D**, yang manakah berada di atas kedua-dua pembahagi dua sama seranjang bagi PQ dan RS?

**INFORMATION FOR CANDIDATES
MAKLUMAT**

UNTUK CALON

1. This question paper consists of **40** questions.

*Kertas soalan ini mengandungi **40** soalan.*

2. Answer **all** questions.

*Jawab **semua** soalan.*

3. Each question is followed by four alternative answers, **A, B, C** and **D**. For each question, choose **one** answer only. Blacken your answer on the objective answer sheet provided.

*Tiap-tiap soalan diikuti oleh empat pilihan jawapan, **A, B, C** dan **D**. Bagi setiap soalan, pilih **satu** jawapan sahaja. Hitamkan jawapan anda pada kertas jawapan objektif yang disediakan.*

4. If you wish to change your answer, erase the blackened mark that you have made. Then blacken the new answer.

Jika anda hendak menukar jawapan, padamkan tanda yang telah dibuat. Kemudian hitamkan jawapan yang baru.

5. The diagrams in the questions provided are not drawn to scale unless stated.

Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan.

6. A list of formulae is provided on pages 2 to 4.

Satu senarai rumus disediakan di halaman 2 hingga 4.

7. You may use a non-programmable scientific calculator.

Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogram.

SULIT

5

50/2

For
Examiner's
Use

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

- 1 Calculate the value of $21 \div 1\frac{1}{2} - (+16)$

Hitung nilai bagi $21 \div 1\frac{1}{2} - (+16)$

[2 marks]
[2 markah]

Answer / Jawapan :

1
2

- 2 Calculate the value of $(6.25 - 2) \div 1\frac{1}{4}$ and express the answer as a decimal.

Hitung nilai bagi $(6.25 - 2) \div 1\frac{1}{4}$ *dan ungkapkannya dalam perpuluhan.*

[2 marks]
[2 markah]

Answer / Jawapan :

[Lihat sebelah

2
2

For
examiner's

SULIT

6

50/2

- 3 a) Find the value of $\sqrt[3]{1000}$
Cari nilai bagi
- b) Calculate the value of $(\sqrt[3]{-27} + 1)^2$
Hitung nilai bagi

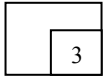
[3 marks]
[3 markah]

Answer / *Jawapan* :

(a)

(b)

3



- 4 Simplify each of the following expressions:
Permudahkan tiap-tiap ungkapan berikut :

(a) $3 - 2(1 - x)$

[3 marks]
[3 markah]

(b) $-3(2 + x) + 5x - 1$

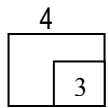
Answer / *Jawapan* :

(a)

(b)

50/2

SULIT



5

Diagram 1 in the answer space shows a polygon $PQRSTU$ and a straight line AB drawn on a grid of tessellated equilateral triangles. Starting from the line AB , draw the polygon $ABCDEF$ which is congruent to polygon $PQRSTU$.

Rajah 1 di ruang jawapan menunjukkan poligon $PQRSTU$ dan garis lurus AB yang dilukis pada grid teselasi segitiga sama sisi. Bermula dengan garis lurus AB itu, lukis poligon $ABCDEF$ yang kongruen dengan poligon $PQRSTU$.

[2 marks]
[2 markah]

Answer / Jawapan :

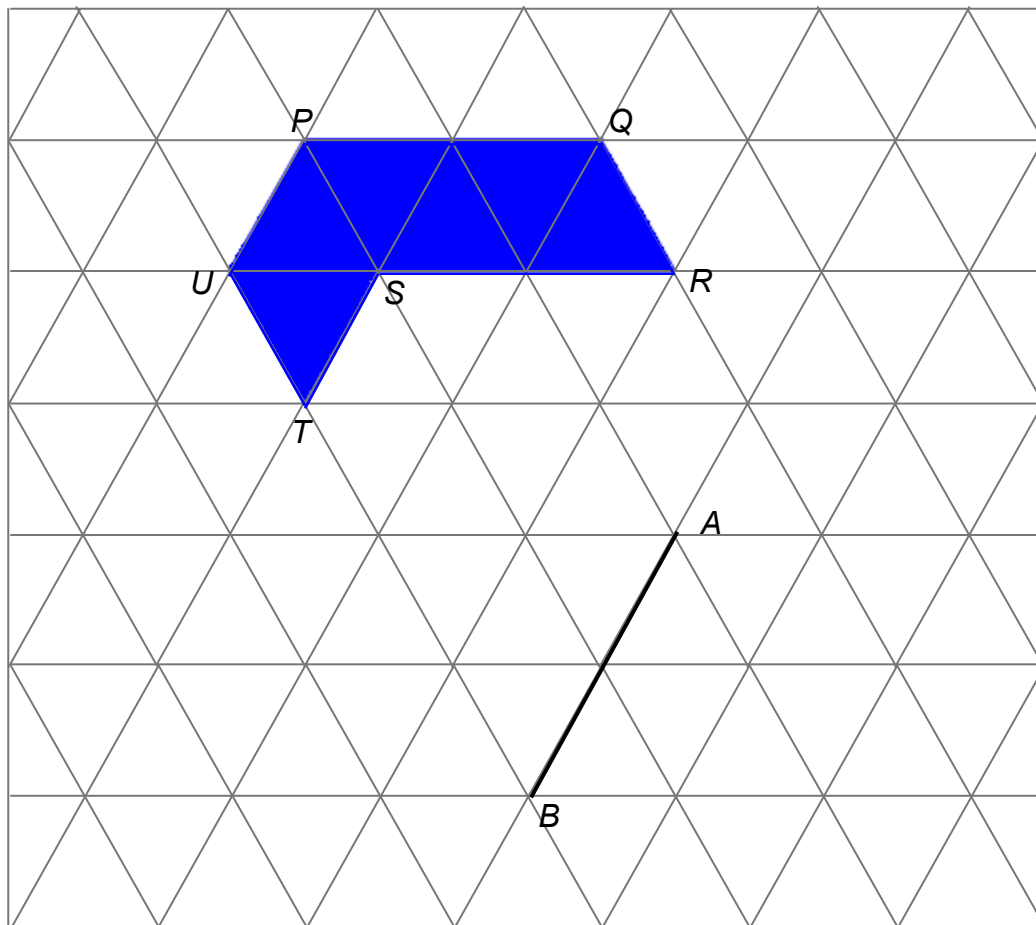


Diagram 1
Rajah 1

For
examiner's

SULIT

8

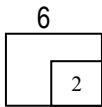
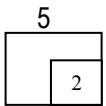
50/2

- 6 Factorise completely :
Faktorkan selengkapnya :

$$6 - 24k^2$$

Answer / Jawapan :

[2 marks]
[2 markah]



- 7 In Diagram 2, B is the midpoint of the line AC .
Dalam Rajah 2, B ialah titik tengah bagi garis lurus AC .

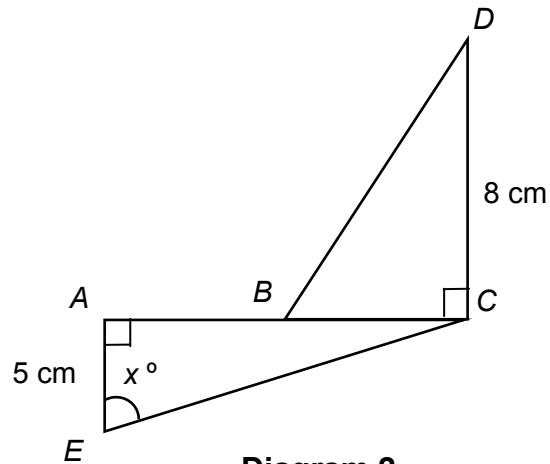


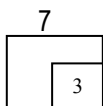
Diagram 2
Rajah 2

- (a) Given that $\cos \angle CDB = \frac{4}{5}$, calculate the length of AC , in cm.
Diberi kos $\angle CDB = \frac{4}{5}$, hitung panjang AC , dalam cm.
- (b) Find the value of $\sin x^\circ$.
Cari nilai bagi $\sin x^\circ$.

[4 marks]
[4 markah]

Answer / Jawapan :

- (a)



b)

8

Diagram 3 in the answer space shows two quadrilaterals, *A* and *B*, drawn on a grid of equal squares. *B* is the image of *A* under a reflection.
Rajah 3 di ruang jawapan menunjukkan dua sisi empat, A dan B, yang di lukis pada grid segi empat sama. B ialah imej bagi A di bawah suatu pantulan tertentu.

On the diagram in the answer space, draw the axis of reflection.
Pada rajah di ruang jawapan, lukis paksi pantulan itu.

[2 marks]
[2 markah]

Answer / Jawapan :

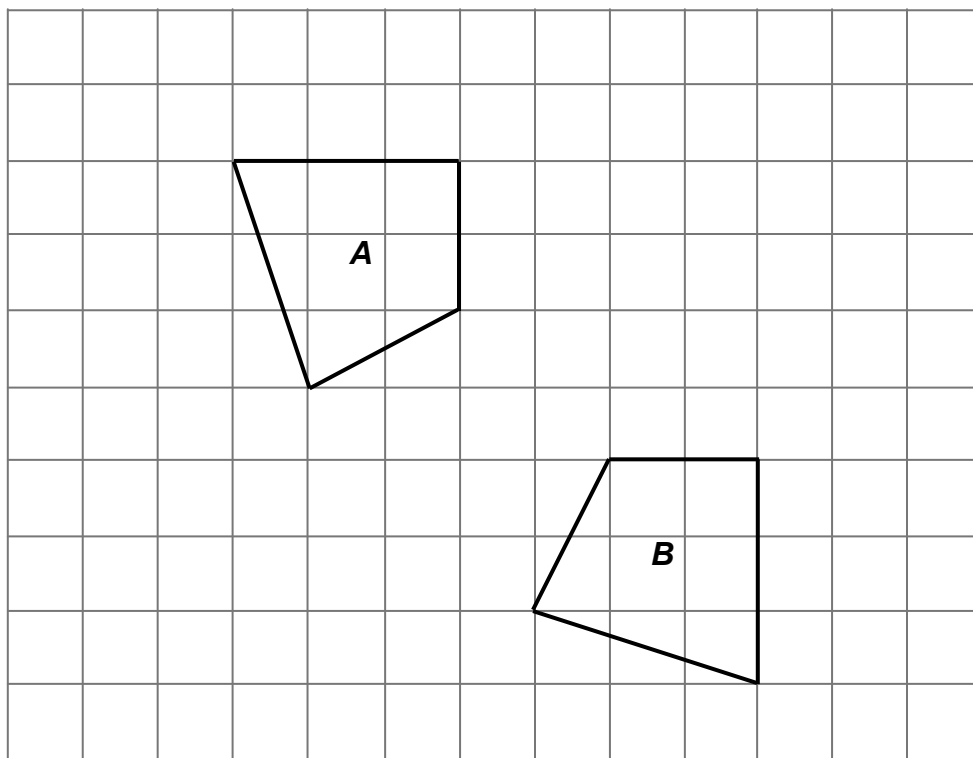


Diagram 3
Rajah 3

[Lihat sebelah

9

Diagram 4 in the answer space shows triangle PQR drawn on a square grid.

Rajah 4 pada ruang jawapan menunjukkan segi tiga PQR yang dilukis di atas grid segi empat sama.

On the diagram, draw and label the image of triangle PQR under a rotation of 90° anti-clockwise about point C .

Pada rajah itu, lukis dan labelkan imej bagi segi tiga PQR di bawah satu putaran 90° arah lawan jam berpusat di C .

[3 marks]

[3 markah]

Answer / Jawapan :

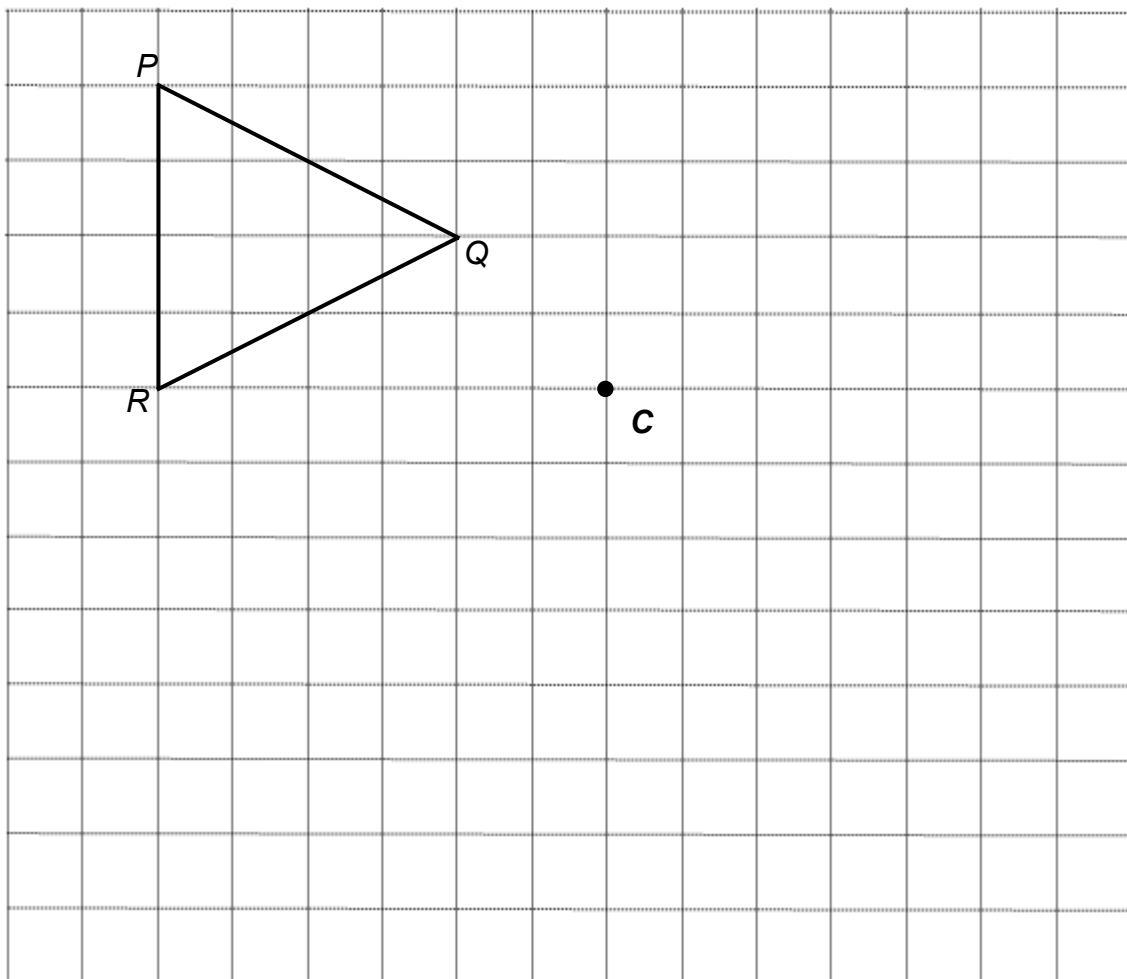
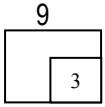


Diagram 4
Rajah 4



10

Diagram 5 in the answer space shows triangle ABC .
 X and Y are two moving points in the diagram.
*Rajah 5 diruang jawapan menunjukkan sebuah segitiga ABC .
 X dan Y adalah dua titik yang bergerak di dalam rajah itu.*

On Diagram 5, draw
Pada rajah 5, lukis

- (i) the locus of X such that it is always equidistant from the lines AB and AC .
lokus bagi X dengan keadaan jarak tegaknya sentiasa sama dari garis AB dan AC .
- (ii) the locus of Y such that $YC = 2.5$ cm
lokus bagi Y dengan keadaan $YC = 2.5$ cm
- (iii) Hence, mark with the symbol \otimes the intersection of the locus of X and the locus of Y .
Seterusnya, tandakan dengan \otimes kedudukan bagi persilangan lokus X dan lokus Y itu.

[3 marks]
 [3 markah]

Answer / Jawapan :

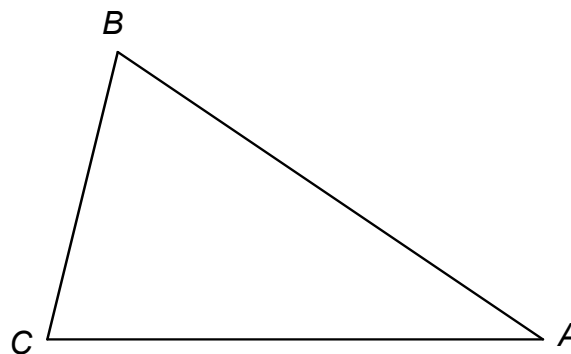


Diagram 5
Rajah 5

- 11 Set squares and protractors are **not** allowed for this question.
Sesiku dan protractor **tidak** dibenarkan untuk soalan ini.

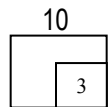


Diagram 6 shows quadrilateral $JKLM$.
Rajah 6 menunjukkan sebuah sisi empat $JKLM$.

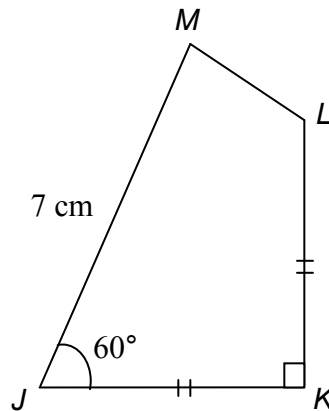


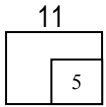
Diagram 6
Rajah 6

- (a) Using only a ruler and a pair of compasses, construct quadrilateral $JKLM$ using the measurements given, beginning from the straight line JK provided in the answer space.
Dengan menggunakan pembaris dan jangka lukis sahaja, bina sisi empat $JKLM$ mengikut ukuran yang diberi, bermula dengan garis lurus JK yang disediakan di ruang jawapan.
- (b) Based on the diagram constructed in 11(a), measure the length, in cm, of LM .
Berdasarkan rajah yang dibina di 11(a), ukurkan panjang LM dalam cm.

[5 marks]

[5 markah]

Answer / Jawapan :



12

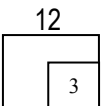
Express $\frac{5x+2}{2x} - \frac{3x-6}{3x}$ as a single fraction in its lowest term.

Ungkapkan $\frac{5x+2}{2x} - \frac{3x-6}{3x}$ sebagai satu pecahan tunggal dalam bentuk termudah.

[3 marks]

[3 markah]

Answer / Jawapan :



13 Given $\sqrt{\frac{p+2k}{3}} = 2$ express k in terms of p .

Diberi $\sqrt{\frac{p+2k}{3}} = 2$ ungkapkan k dalam sebutan p .

Answer / Jawapan :

[3 marks]

[3 markah]

[Lihat sebelah

- 14 Solve each of the following linear equations:
Selesaikan tiap-tiap persamaan linear berikut:

13
3

(a) $\frac{k}{3} = -4$

(b) $2p+5 = \frac{5p-3}{2}$

[3 marks]
[3 markah]

Answer / Jawapan :

(a)

(b)

14

3

- 15 (a) Find the value of $5^{\frac{7}{3}} \div 5^{\frac{4}{3}}$.
Cari nilai bagi $5^{\frac{7}{3}} \div 5^{\frac{4}{3}}$

(b) Simplify $(g^{-2}h^3)^2 \div g^2h^4$

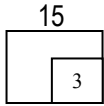
Permudahkan $(g^{-2}h^3)^2 \div g^2h^4$

[3 marks]
[3 markah]

Answer / Jawapan :

(a)

(b)



16 Evaluate
Nilaikan

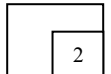
$$16^{\frac{1}{2}} \div 8^{\frac{1}{3}} \times 4^{-2}$$

[2 marks]

[2 markah]

Answer / Jawapan :

16



17. List all the integer values of x which satisfy both the inequalities

$$x + 5 \leq 1 \text{ and } -\frac{x}{2} \leq 3.$$

Senaraikan semua nilai integer x yang memuaskan kedua-dua ketaksamaan

linear $x + 5 \leq 1$ dan $-\frac{x}{2} \leq 3$.

[3 marks]

[3 markah]

Answer / Jawapan :

[Lihat sebelah

18. Table 1 shows the number students who celebrate birthday in five consecutive months. 17
Jadual 1 menunjukkan bilangan pelajar yang menyambut hari lahir dalam lima bulan berturut-turut.

3

Month <i>Bulan</i>	January <i>Januari</i>	February <i>Februari</i>	March <i>Mac</i>	April <i>April</i>	May <i>Mei</i>
Number of students <i>Bilangan pelajar</i>	30	45	50	25	60

Table 1
Jadual 1

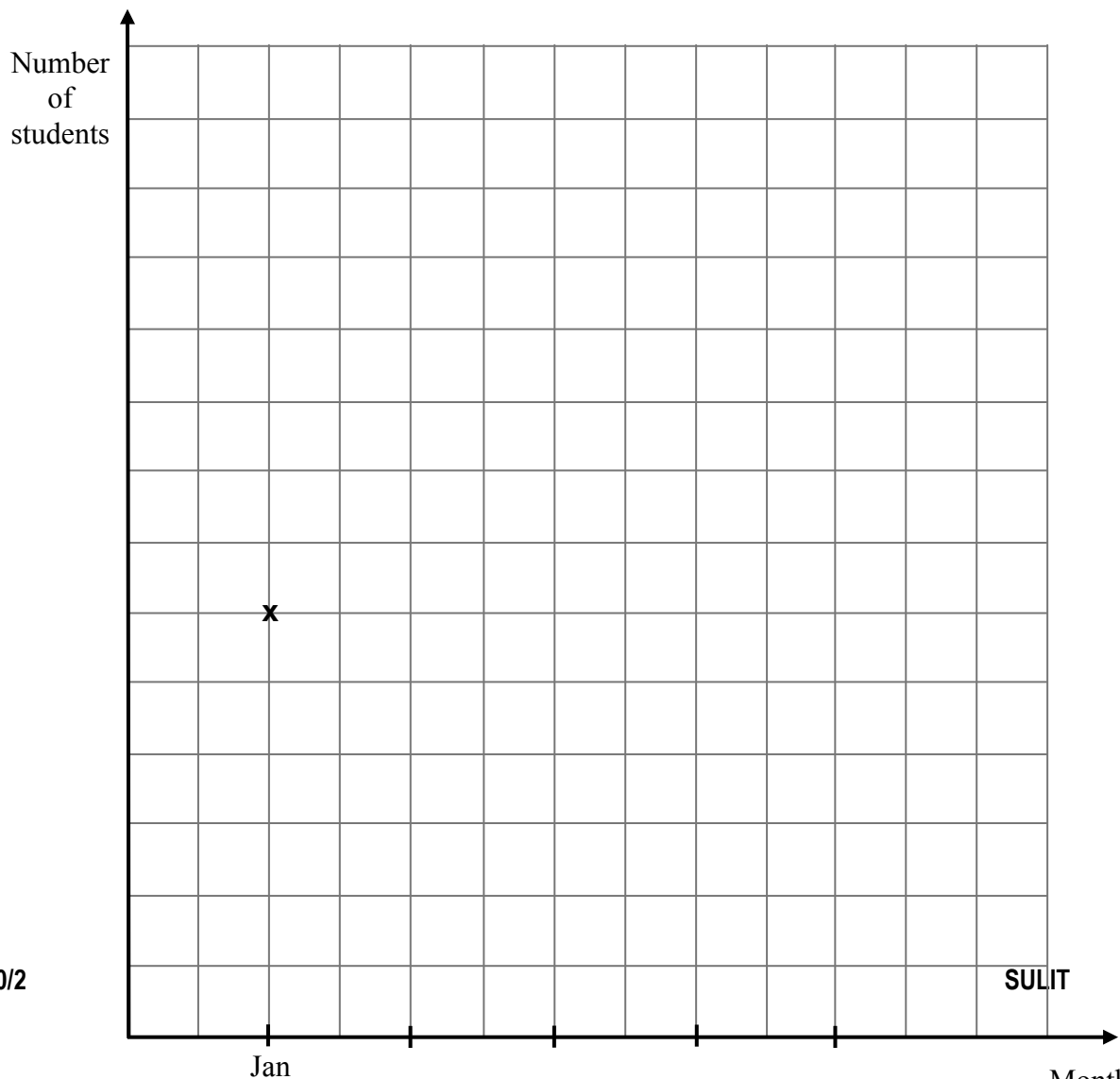
On Diagram 7 in the answer space, draw the line graph to represent the information in Table 1.

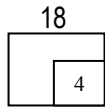
Dalam Rajah 7 di ruang jawapan, lukis graf garis untuk mewakili maklumat dalam Jadual 1.

[4 marks]

Answer / *Jawapan* :

[4 markah]





19. Diagram 8 is a pie chart showing the types of occupation for 72 residents of Taman Serai Wangi.

Diagram 7

Rajah 7 ialah carta pai yang menunjukkan jenis pekerjaan bagi 72 orang penduduk Taman Serai Wangi.

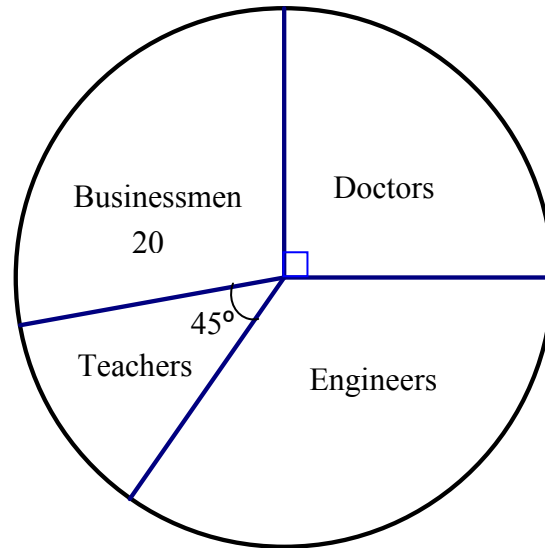


Diagram 8
Rajah 8

Calculate
Hitung

- (a) the mode of occupation of residents in the area,
mod bagi pekerjaan penduduk di kawasan tersebut,
- (b) the number of engineers in the residential area.
bilangan jurutera di dalam kawasan perumahan tersebut.

[4 marks]
[4 markah]

Answer / Jawapan :

(a)

(b)

[Lihat sebelah

20

Use the graph paper on page 19 to answer this question.

Gunakan kertas graf di halaman 19 untuk menjawab soalan ini.

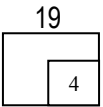


Table 2 shows the values of two variables, x and y , of a function.

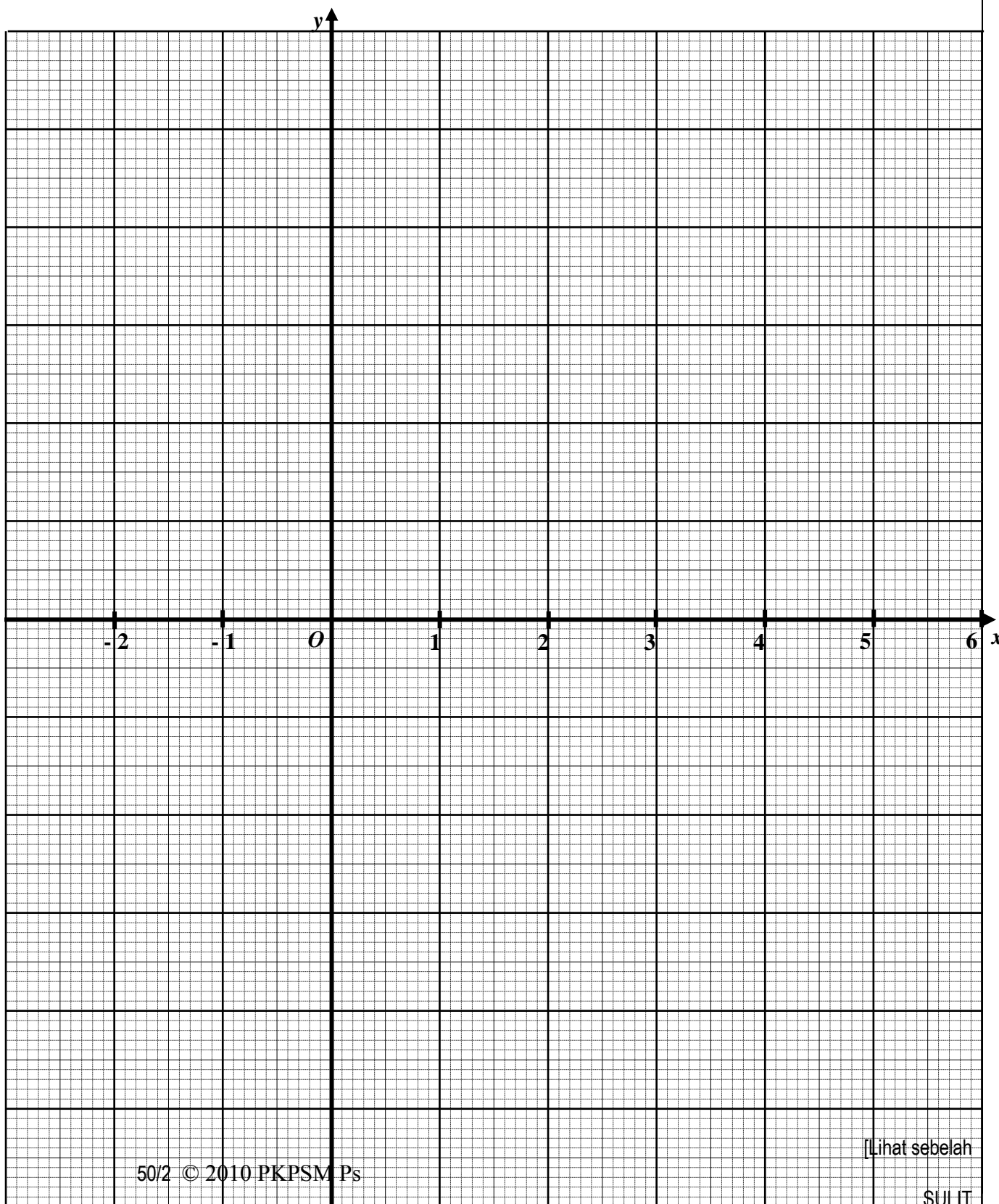
Jadual 2 menunjukkan nilai-nilai dua pembolehubah, x dan y , bagi suatu fungsi.

x	-2	-1	0	1	2	3	4	5
y	7	0	-5	-8	-9	-8	-5	0

Table 2
Jadual 2

- (a) By using a scale of 1 cm to 1 unit, complete and label the y -axis.
Dengan menggunakan skala 1 cm kepada 1 unit, lengkap dan labelkan paksi- y .
- (b) Based on Table 2, plot all the points on the graph paper.
Berdasarkan Jadual 2, plot semua titik pada kertas graf itu.
- (c) Hence, draw the graph of the function.
Seterusnya, lukiskan graf fungsi itu.

[4 marks]
[4 markah]

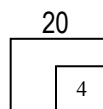


For
examiner's

SULIT

20

50/2

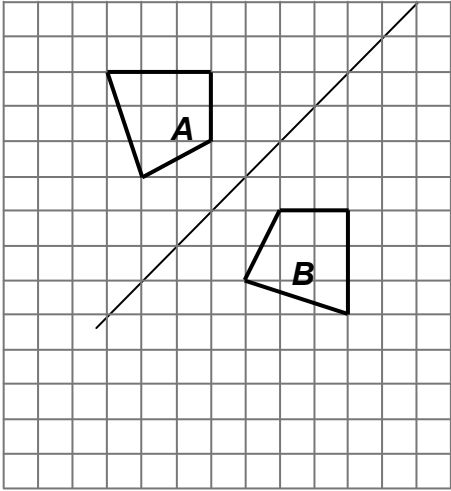
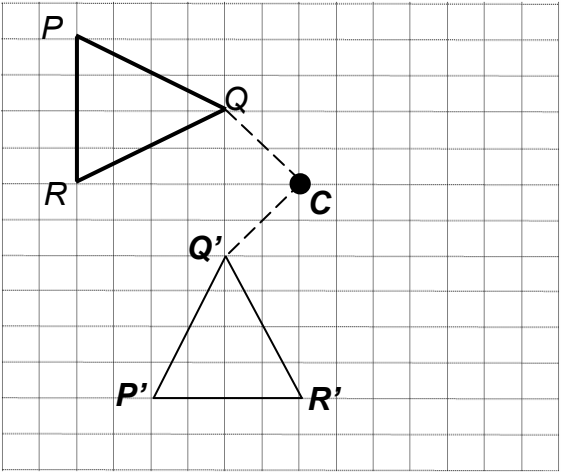


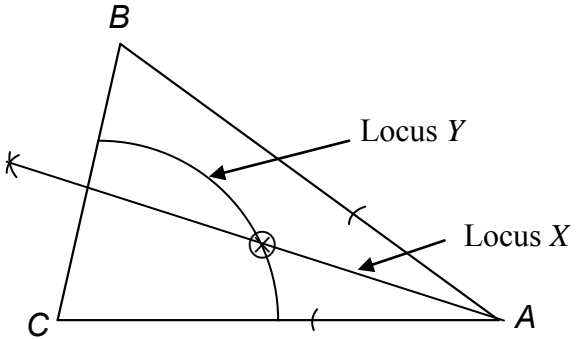
**PEPERIKSAAN PERCUBAAN BERSAMA
PENILAIAN MENENGAH RENDAH (PMR) 2010
ANJURAN BERSAMA
PKPSM CAWANGAN NEGERI PERLIS
DAN
JABATAN PELAJARAN PERLIS**

MATEMATIK KERTAS 1

No. Soalan	Jawapan
1.	D
2.	A
3.	B
4.	D
5.	A
6.	A
7.	C
8.	B
9.	A
10.	C
11.	D
12.	C
13.	B
14.	D
15.	A
16.	D
17.	B
18.	D
19.	A
20.	B

No. Soalan	Jawapan
21.	D
22.	A
23.	B
24.	D
25.	B
26.	B
27.	C
28.	B
29.	A
30.	C
31.	D
32.	D
33.	B
34.	C
35.	C
36.	C
37.	A
38.	B
39.	C
40.	C

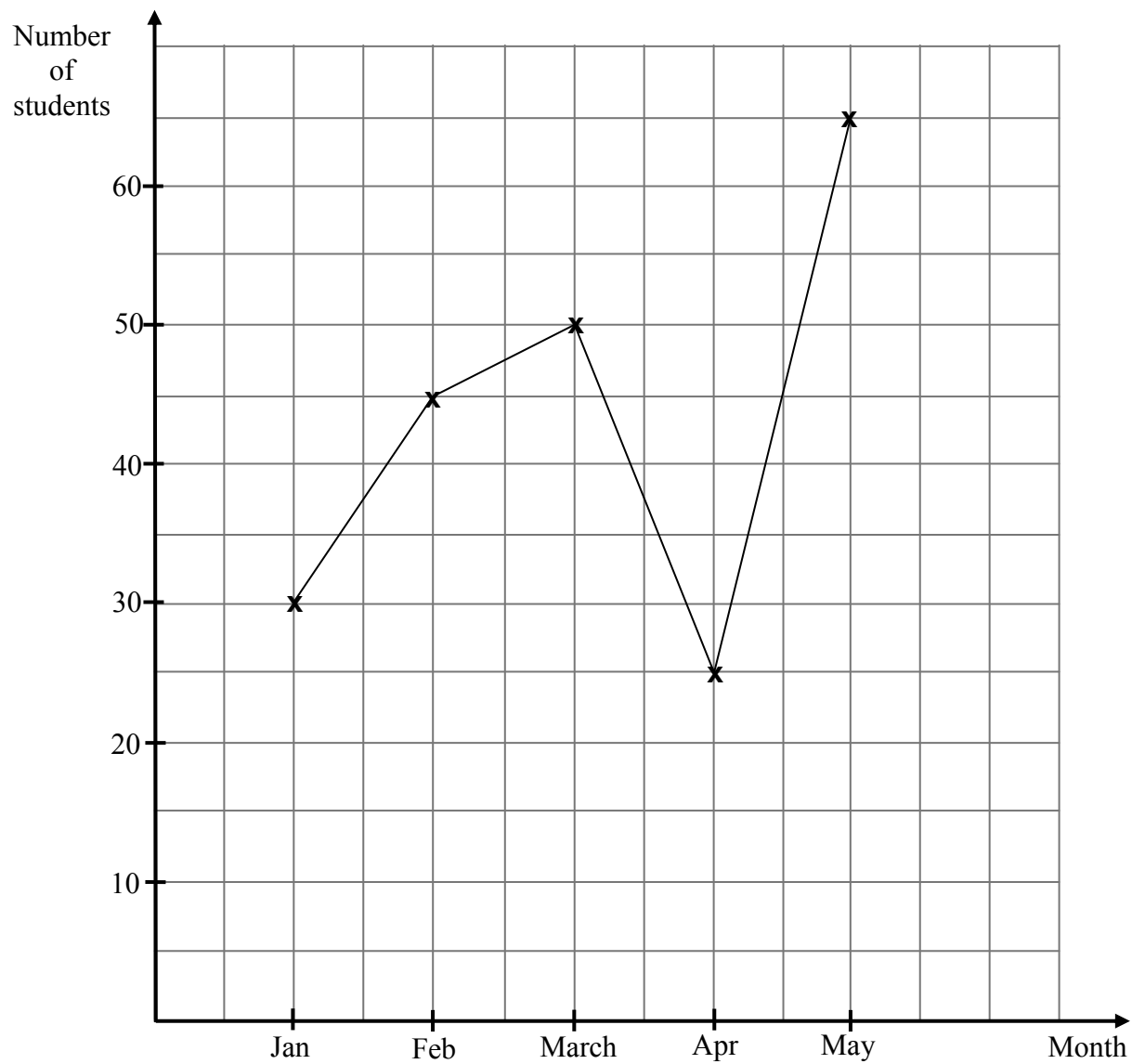
<p>7</p>	<p>(a) $BD = 10\text{ cm}$ $AC = 12\text{ cm}$</p> <p>(b) $EC = 13\text{ cm}$ $\sin x^\circ = \frac{12}{13}$</p>	<p>1 1 1 1</p>	<p>4</p>
<p>8</p>		<p>2</p>	<p>2</p>
<p>9</p>	 <p>*image drawn correctly without labeling</p> <p>*any 2 sides drawn correctly</p>	<p>3 2 1</p>	<p>3</p>

<p>10</p>	 <p>Locus X drawn correctly Locus Y drawn correctly Point of intersection</p>	<p>1 1 1</p>	<p>3</p>
<p>11</p>	<p>a) Construct angle 60° correctly at point J Construct perpendicular line from point K Mark point M correctly Complete quadrilateral $JKLM$ b) $1.5 \text{ cm} \pm 0.1$</p>	<p>1 1 1 1 1</p>	<p>5</p>
<p>12</p>	$\frac{15x + 6 - 6x + 12}{6x}$ $\frac{9(x+2)}{6x}$ $\frac{3x+6}{2x} \text{ OR } \frac{3(x+2)}{2x}$	<p>1 1 1</p>	<p>3</p>
<p>13</p>	$\frac{p + 2k}{k} = 4$ $2k = 12 - p$ $k = \frac{12 - p}{2}$	<p>1 1 1</p>	<p>3</p>
<p>14</p>	<p>(a) -12 (b) $4p - 5p = -13 - 10$ OR $5p - 4p = 10 + 3$ $p = 13$</p>	<p>1 1 1</p>	<p>3</p>

15	<p>(a) 5</p> <p>*5¹ is not accepted</p> <p>(b) $g^{-4-2}h^{6-4}$</p> <p>$g^{-6}h^2$ OR $\frac{h^2}{g^6}$</p>	1	
		1	
		1	3
16	<p>$\frac{4}{2} \times \frac{1}{16}$ OR 2^{2-1-4}</p> <p>$\frac{1}{8}$</p> <p>*2⁻³ is not accepted</p>	1	
		1	2
17	<p>$x \leq -4$</p> <p>$x \geq -6$</p> <p>$x = -6, -5, -4$</p>	1	
		1	
		1	3
18	<p>Uniform scale on both axes</p> <p>All points mark correctly</p> <p>Correct line graph</p> <p>*3 points plotted correctly</p> <p>Refer appendix for the graph</p>	1	
		2	
		1	
		1	4
19	<p>a) Engineer</p> <p>b) Number of teachers = 9 OR</p> <p>Number of doctors = 18</p> <p>$72 - (18 + 20 + 9)$ OR $\frac{125}{360} \times 72$</p> <p>25</p>	1	
		1	
		1	4
		1	
20	<p>Uniform scale on the y-axis</p> <p>Plot all points correctly</p> <p>All points are joined and smooth curve</p> <p>*6 points plotted correctly</p> <p>Refer appendix for the graph</p>	1	
		2	
		1	
		1	4
	TOTAL		60

APPENDIX

NO. 18



NO. 20

