

SULIT



**JABATAN PELAJARAN NEGERI
NEGERI SEMBILAN DARUL KHUSUS**

**PRAPENILAIAN MENENGAH RENDAH 2012
MATHEMATICS**

50/1

Kertas 1

Ogos

$1\frac{1}{4}$ 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 26 halaman bercetak.

[Lihat halaman sebelah

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 = $\frac{\text{total distance}}{\text{total time}}$

$$\text{Purata laju} = \frac{\text{jumlah jarak}}{\text{jumlah masa}}$$

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

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

8 Pythagoras's theorem / teorem Pythagoras

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

SHAPES AND SPACES

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 segi tiga = $\frac{1}{2} \times$ tapak \times tinggi
- 3 Area of parallelogram = base \times height
Luas segi empat 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 of sphere = $4\pi r^2$
Luas permukaan sfera = $4\pi j^2$
- 9 Volume of right prism = cross sectional area \times length
Isi padu prisma tegak = luas keratan rentas \times panjang
- 10 Volume of cuboid = length \times width \times height
Isi padu kuboid = panjang \times lebar \times tinggi
- 11 Volume of cylinder = $\pi r^2 h$
Isi padu silinder = $\pi j^2 t$
- 12 Volume of cone = $\frac{1}{3} \pi r^2 h$
Isi padu kon = $\frac{1}{3} \pi j^2 t$

- 13 Volume of sphere $= \frac{4}{3} \pi r^3$
Isi padu sfera $= \frac{4}{3} \pi j^3$
- 14 Volume of right pyramid $= \frac{1}{3} \times \text{base area} \times \text{height}$
Isi padu piramid tegak $= \frac{1}{3} \times \text{luas tapak} \times \text{tinggi}$
- 15 Sum of interior angles of a polygon $= (n-2) \times 180^\circ$
Hasil tambah sudut pedalaman poligon $= (n-2) \times 180^\circ$
- 16 $\frac{\text{Length of arc}}{\text{Circumference}} = \frac{\text{Angle at centre}}{360^\circ}$
 $\frac{\text{Panjang lengkok}}{\text{Lilitan bulatan}} = \frac{\text{Sudut di pusat}}{360^\circ}$
- 17 $\frac{\text{Area of sector}}{\text{Area of circle}} = \frac{\text{Angle at centre}}{360^\circ}$
 $\frac{\text{Luas sektor}}{\text{Luas bulatan}} = \frac{\text{Sudut di pusat}}{360^\circ}$
- 18 Scale factor / *Faktor skala*, $k = \frac{PA'}{PA}$
- 19 Area of image $= k^2 \times \text{area of object}$
Luas imej $= k^2 \times \text{luas objek}$

- 1 Which number when rounded off to the nearest thousand becomes 563 000?
Nombor manakah apabila dibundarkan kepada ribu yang hampir menjadi 563 000?
- A 563 735
 B 563 568
 C 562 605
 D 562 236

- 2 Which of the following gives the largest value?
Antara berikut yang manakah memberi nilai yang paling besar?

A $\frac{1}{2} + \frac{1}{5}$

B $\frac{1}{4} + \frac{1}{3}$

C $\frac{1}{6} + \frac{1}{2}$

D $\frac{1}{9} + \frac{1}{8}$

- 3 Table 1 shows the temperature of five cities on a particular day.
Jadual 1 menunjukkan suhu bagi lima bandar raya pada suatu hari tertentu.

Cities <i>Bandar Raya</i>	Temperature (°C) <i>Suhu (°C)</i>
London	−8°
Seoul	−2°
Cape Town	14°
Cairo	32°
Tokyo	2°

Table 1
Jadual 1

Find the difference, in °C, the temperature between the coldest and the warmest cities.

Cari perbezaan, dalam °C, suhu antara bandar raya yang bersuhu paling sejuk dan bandar raya yang bersuhu paling panas.

- A 18°
 B 30°
 C 34°
 D 40°

- 4 Mr. Ramasamy bought a motorcycle for RM14 500. After three years, he sold the motorcycle for RM11 600.

Calculate the percentage loss.

Encik Ramasamy membeli sebuah motorsikal berharga RM14 500. Selepas tiga tahun, dia menjual motorsikal itu pada harga RM11 600.

Hitung peratus kerugiannya.

- A 20
B 25
C 60
D 80
- 5 Diagram 1 shows four cards, *K*, *L*, *M* and *N*. Each card has four numbers.
Rajah 1 menunjukkan empat kad K, L, M dan N. Setiap kad mempunyai empat nombor.

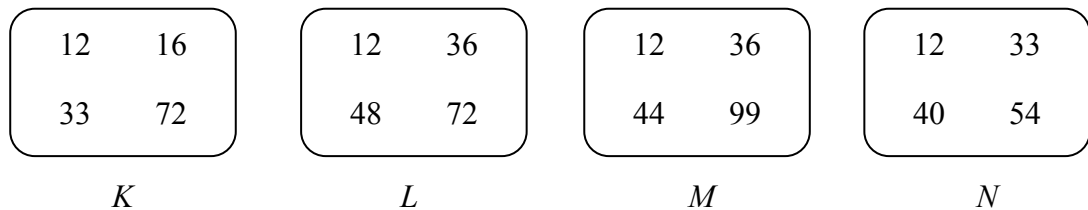


Diagram 1

Rajah 1

Which card has numbers that are all common factors of 3 and 4.

Kad yang manakah mempunyai nombor-nombor yang semuanya adalah faktor sepunya 3 dan 4.

- A *K*
B *L*
C *M*
D *N*
- 6 Aisyah has 19 m of cloth. She uses it to make 15 cushion covers. Each cushion requires 1.25 m of cloth.
What is the length, in cm, of the remaining cloth?
Aisyah ada 19 m kain. Dia menggunakan kain itu untuk membuat 15 helai sarung kusyen. Setiap helai sarung kusyen memerlukan 1.25 m kain.
Berapakah panjang, dalam cm, baki kain itu?
- A 0.25
B 2.5
C 25
D 250

- 7 A flight from Penang to Kuala Lumpur takes 50 minutes. The flight which was scheduled to depart at 1435 hours is delayed by $\frac{3}{4}$ hour.

At what time, in the 24 hour system, did the aeroplane arrive at Kuala Lumpur?

Penerbangan dari Pulau Pinang ke Kuala Lumpur mengambil masa 50 minit.

Penerbangan dijadualkan berlepas pada jam 1435 tetapi tertunda selama $\frac{3}{4}$ jam.

Pada pukul berapakah, dalam sistem 24 jam, kapal terbang itu tiba di Kuala Lumpur?

- A 1300
B 1340
C 1440
D 1610
- 8 In Diagram 2, $PQRS$ and TQU are straight lines.
Dalam Rajah 2, $PQRS$ dan TQU ialah garis lurus.

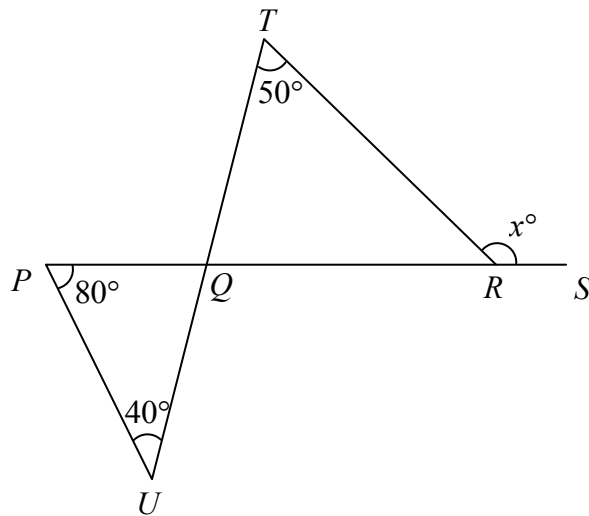


Diagram 2

Rajah 2

Find the value of x .

Cari nilai x .

- A 110
B 120
C 140
D 170

- 9 Ramjit Singh has RM4 800. He uses $\frac{3}{8}$ of the money to buy a handphone and RM1 800 to buy a laptop. He gives the balance of the money to his mother. What is the fraction of money he gives to his mother?

Ramjit Singh mempunyai RM4 800. Dia menggunakan $\frac{3}{8}$ daripada wang itu untuk membeli telefon bimbit dan RM1 800 untuk membeli komputer riba. Dia memberi baki wang itu kepada ibunya.

Apakah pecahan wang yang telah diberikan kepada ibunya?

- A $\frac{1}{4}$
- B $\frac{1}{2}$
- C $\frac{5}{8}$
- D $\frac{3}{4}$
- 10 In Diagram 3, PRQ is a right-angled triangle. PRS is an isosceles triangle.
Dalam Rajah 3, PRQ ialah segi tiga bersudut tegak. PRS ialah segi tiga sama kaki.

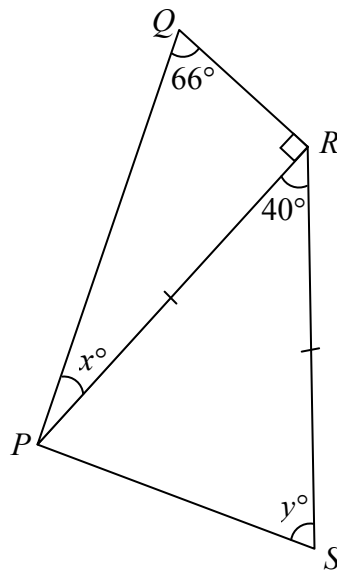


Diagram 3
Rajah 3

Find the value of $y - x$.

Cari nilai $y - x$.

- A 26
- B 30
- C 46
- D 96

- 11 In Diagram 4, P, Q, R, S, T and U are the vertices of a regular polygon.
 Dalam Rajah 4, P, Q, R, S, T dan U ialah bucu-bucu bagi sebuah poligon sekata.

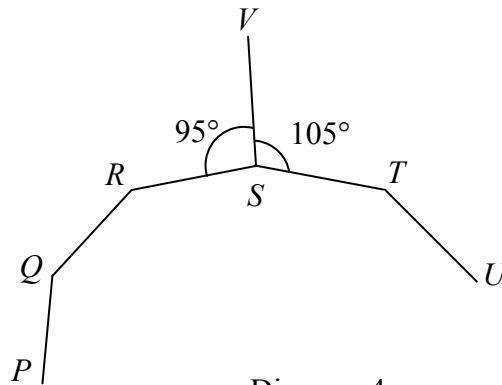


Diagram 4
Rajah 4

Find the number of sides of the polygon.

Cari bilangan sisi poligon itu.

- A 9
 B 10
 C 12
 D 18
- 12 Diagram 5 shows a circle with centre O and radius 6 cm.
 Rajah 5 menunjukkan sebuah bulatan berpusat O dan berjejari 6 cm.

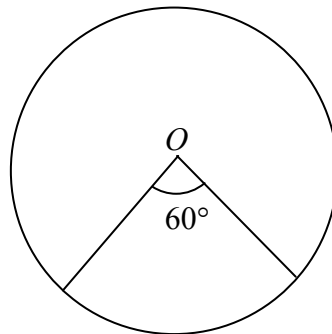


Diagram 5
Rajah 5

Calculate the area, in cm^2 , of the major sector of the circle.

Hitung luas, dalam cm^2 , sektor major bulatan itu.

- A 5π
 B 6π
 C 10π
 D 30π

- 13 In Diagram 6, $ABCD$ is a rectangle. F is the midpoint of BC .
 Dalam Rajah 6, $ABCD$ ialah sebuah segi empat tepat. F ialah titik tengah BC .

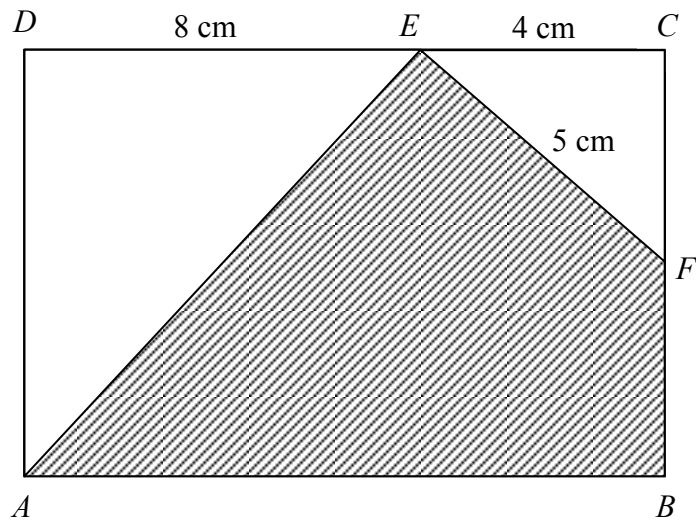


Diagram 6
Rajah 6

- Calculate the perimeter, in cm, of the shaded region.
 Hitung perimeter, dalam cm, kawasan yang berlorek.
- A** 25
B 30
C 36
D 42
- 14 The distance between Seremban and Bukit Beruntung is 120 km. Wani drives from Seremban to Bukit Beruntung with a speed of 80 kmh^{-1} . She drives back to Seremban from Bukit Beruntung with a speed of 90 kmh^{-1} . Calculate the total time taken, in hours, for the whole journey.
 Jarak di antara Seremban dan Bukit Beruntung ialah 120 km. Wani memandu dari Seremban ke Bukit Beruntung dengan kelajuan 80 kmj^{-1} . Dia memandu balik ke Seremban dari Bukit Beruntung dengan kelajuan 90 kmj^{-1} . Hitung jumlah masa yang diambil, dalam jam, untuk keseluruhan perjalanan itu.
- A** $1\frac{1}{3}$
B $1\frac{1}{2}$
C $2\frac{2}{5}$
D $2\frac{5}{6}$

- 15 Diagram 7 shows a regular hexagon $PQRSTU$. SWV , TUV and PWU are straight lines.

Rajah 7 menunjukkan sebuah heksagon sekata $PQRSTU$. SWV , TUV dan PWU ialah garis lurus.

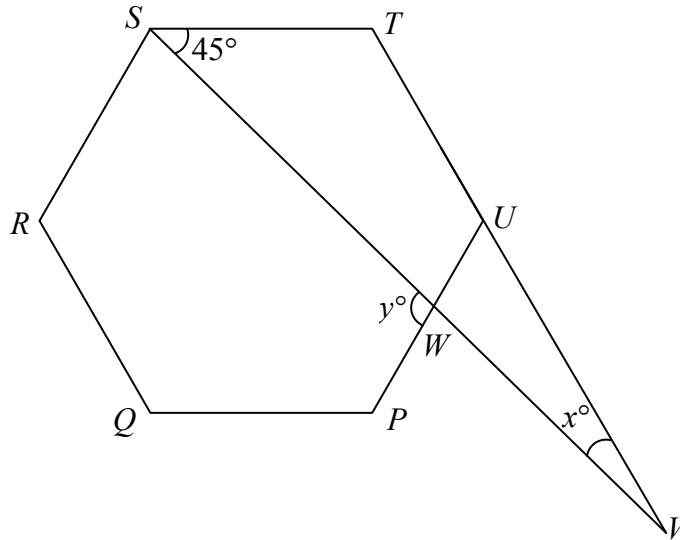


Diagram 7

Rajah 7

Find the value of $y - x$.

Cari nilai $y - x$.

- A** 75
- B** 90
- C** 105
- D** 120
- 16 It is given that $x = -6$ and $4x - 3y = 9$.
Calculate the value of y .
Diberi bahawa $x = -6$ dan $4x - 3y = 9$.
Hitung nilai y .
- A** -11
- B** -5
- C** 5
- D** 11

- 17 Diagram 8 shows a rectangular lawn owned by Puan Latifah.
Rajah 8 menunjukkan laman berbentuk segi empat tepat milik Puan Latifah.

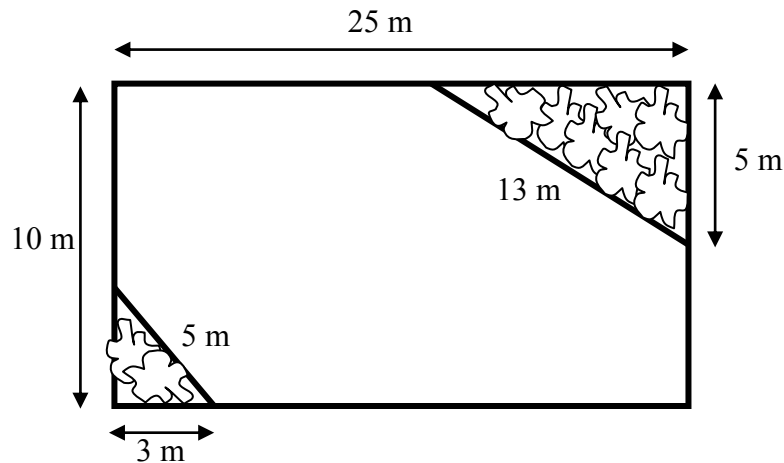


Diagram 8
Rajah 8

Puan Latifah wants to plant flowers at two triangular shaped corners. The rest of the lawn is to be planted with grass.

Find, in m^2 , the area of the lawn to be planted with grass.

Puan Latifah ingin menanam pokok bunga pada dua sudut berbentuk segi tiga. Bahagian lain laman akan ditanam dengan rumput.

Cari, dalam m^2 , luas laman yang akan ditanam dengan rumput.

- A 214
B 170
C 80
D 64
- 18 The exchange rate of Ringgit Malaysia to US Dollar is RM360 for every 100 US Dollar last December. Ahmad wants to change 720 US Dollar to Ringgit Malaysia.
Calculate the total amount of money, in RM, that he will receive.
Kadar pertukaran Ringgit Malaysia kepada US Dollar ialah RM360 setiap 100 US Dollar pada Disember lepas. Ahmad hendak menukar 720 US Dollar kepada Ringgit Malaysia.
Hitung jumlah wang, dalam RM, yang akan diterima.
- A 200
B 460
C 1440
D 2592

- 19 Diagram 9 shows a cylindrical mould and two metal balls.
Rajah 9 menunjukkan sebuah acuan silinder dan dua biji bebola logam.

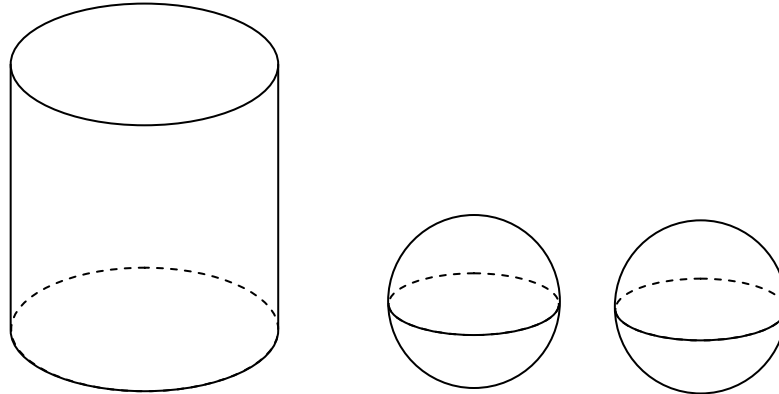


Diagram 9
Rajah 9

The diameter of the cylindrical mould is 24 cm. The volume of a metal ball is $288\pi \text{ cm}^3$. Two metal balls are melted into liquid form and poured into the cylindrical mould.

Calculate the height, in cm, of the liquid in the mould.

Diameter acuan silinder ialah 24 cm. Isi padu sebiji bebola logam ialah $288\pi \text{ cm}^3$. Dua biji bebola logam dicairkan dan dituangkan ke dalam acuan silinder itu.

Hitung tinggi, dalam cm, cecair dalam acuan itu.

- A** 1
B 2
C 4
D 6
- 20 Given that $P : Q = 2 : 5$ and $P : R = 3 : 4$.
 Find the ratio of $P : Q : R$.
*Diberi bahawa $P : Q = 2 : 5$ dan $P : R = 3 : 4$.
 Cari nisbah $P : Q : R$.*
- A** 5 : 5 : 4
B 5 : 8 : 9
C 6 : 15 : 8
D 6 : 15 : 20

- 21 Diagram 10 shows a prism.
Rajah 10 menunjukkan sebuah prisma.

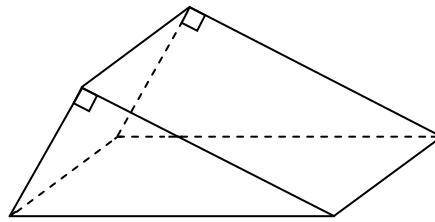
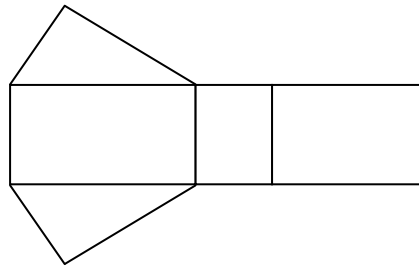


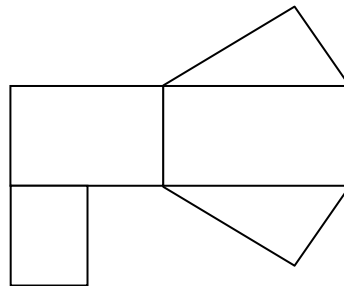
Diagram 10
Rajah 10

Which of the following is the net of the prism?
Manakah yang berikut bentangan prisma itu?

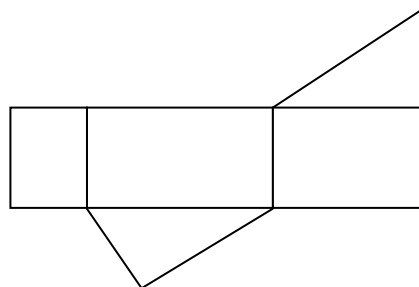
A



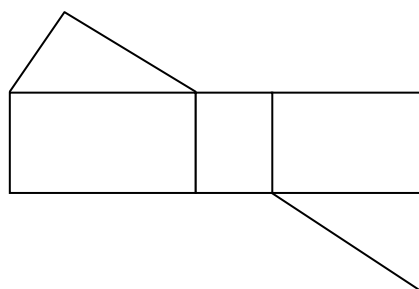
B



C



D



- 22 Diagram 11 shows the remaining of a cuboid.
Rajah 11 menunjukkan baki sebuah pepejal kuboid.

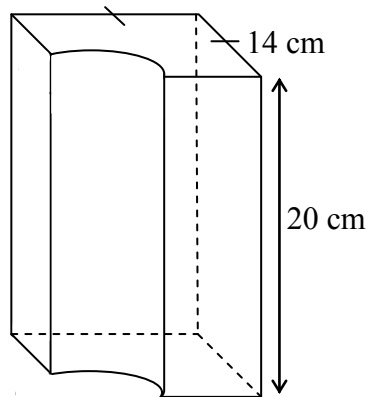


Diagram 11

Rajah 11

A quarter of a cylinder with diameter of 14 cm is removed from the cuboid solid.
Find the volume, in cm^3 , of the remaining solid.

Suku bahagian daripada satu pepejal silinder berdiameter 14 cm dikeluarkan daripada pepejal kuboid itu.

Hitung isi padu, dalam cm^3 , baki pepejal itu.

[Use / Guna $\pi = \frac{22}{7}$]

- A 2380
B 3150
C 3810
D 3920
- 23 Table 2 shows the values of variables x and y for the function $y = 3x^2 + 1$.
Jadual 2 menunjukkan nilai-nilai pembolehubah x dan y bagi fungsi $y = 3x^2 + 1$.

x	-1	0	1	2
y	M	1	4	n

Table 2

Jadual 2

Calculate the value of $n - m$.

Hitung nilai $n - m$.

- A 3
B 9
C 15
D 27

- 24 Diagram 12 shows a circle with centre O .
Rajah 12 menunjukkan sebuah bulatan berpusat O .

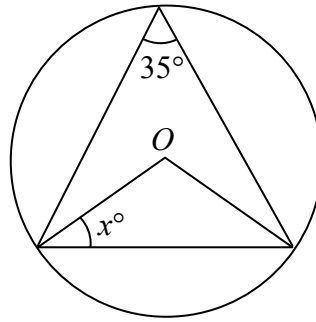


Diagram 12
Rajah 12

Find the value of x .

Cari nilai x .

- A** 45
B 55
C 60
D 70
- 25 In Diagram 13, ST and PQ are two parallel lines.
Dalam Rajah 13, ST dan PQ ialah dua garis selari.

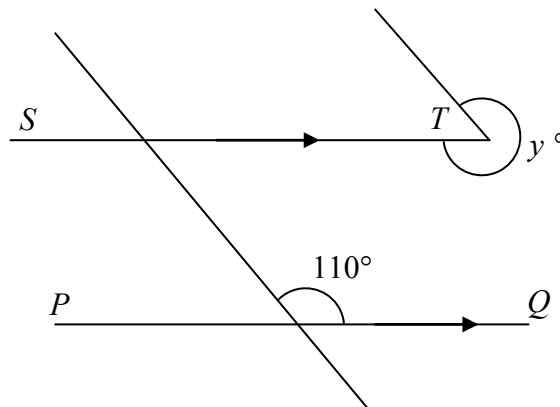


Diagram 13
Rajah 13

Find the value of y .

Cari nilai y .

- A** 250
B 270
C 290
D 340

- 26 Diagram 14 shows a triangular and a square frames.
Rajah 14 menunjukkan sebuah rangka berbentuk segi tiga dan segi empat sama.

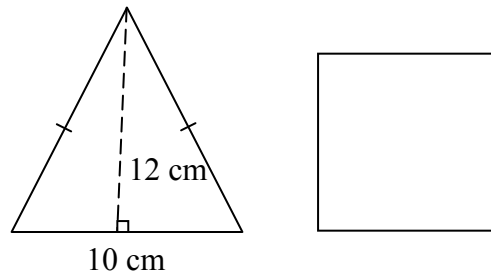


Diagram 14

Rajah 14

The same length of wire is used to form both the triangular and the square frames.
The height of the triangle is 12 cm and the base is 10 cm.

Find the length, in cm, of the side of the square.

Panjang dawai yang sama digunakan untuk membentuk rangka berbentuk segi tiga dan segi empat sama itu. Tinggi segi tiga ialah 12 cm dan tapaknya ialah 10 cm.

Cari panjang sisi, dalam cm, segi empat sama itu.

- A 22
B 15
C 9
D 6
- 27 Table 3 shows the number of eggs eaten by 30 students in a week.
Jadual 3 menunjukkan bilangan telur yang dimakan oleh 30 orang murid dalam seminggu.

Number of eggs <i>Bilangan telur</i>	0	2	4	6	8
Number of students <i>Bilangan murid</i>	3	7	10	6	4

Table 3

Jadual 3

Calculate the number of students who eat more than 2 eggs but less than 8 eggs in a week.

Hitung bilangan murid yang makan lebih dari 2 biji telur tetapi kurang dari 8 biji telur dalam tempoh seminggu.

- A 10
B 16
C 18
D 20

- 28 In Diagram 15, $JKLM$ is a rectangle. PLM , NKP and JNQ are right-angled triangles.

Dalam Rajah 15, $JKLM$ ialah sebuah segi empat tepat. PLM , NKP dan JNQ ialah segi tiga bersudut tegak.

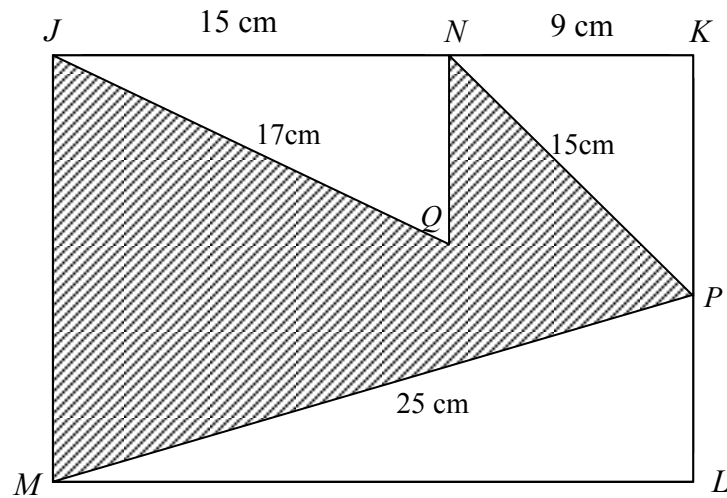


Diagram 15

Rajah 15

Calculate the area, in cm^2 , of the shaded region.

Hitung luas kawasan, dalam cm^2 , kawasan berlorek.

- A 84
 B 86
 C 198
 D 258
- 29 Table 4 shows the donations made by a group of students to the Charity Fund of their school.

Jadual 4 menunjukkan sumbangan yang dibuat oleh sekumpulan pelajar kepada Tabung Kebajikan sekolah mereka.

Donation (RM) Sumbangan (RM)	10	20	30	40	50
Frequency Kekerapan	4	5	3	4	8

Table 4

Jadual 4






Find the median.

Cari median.

- A 30
 B 35
 C 45
 D 50

30 Diagram 16 is a pictogram showing the number of dresses sold on a website in five months.

Rajah 16 ialah piktogram yang menunjukkan bilangan baju yang dijual di laman sesawang dalam tempoh lima bulan.

Month <i>Bulan</i>	Number of dresses <i>Bilangan baju</i>
March <i>Mac</i>	
April <i>April</i>	
May <i>Mei</i>	
June <i>Jun</i>	
July <i>Julai</i>	



represents 50 dresses
mewakili 50 baju

Diagram 16

Rajah 16

Calculate the number of dresses sold after April.

Hitung bilangan baju yang dijual selepas bulan April.

- A 1050
- B 1250
- C 1300
- D 1500

- 31 Solve the linear inequality $15 - 3x > 2x - 5$.
Selesaikan ketaksamaan linear $15 - 3x > 2x - 5$.
- A** $x < 4$
- B** $x > 4$
- C** $x < -15$
- D** $x > -15$

- 32 In Diagram 17, $PQRS$ is a rhombus with side 8 cm. QTS is an arc of a circle with centre P .
Dalam Rajah 17, $PQRS$ ialah sebuah rombus dengan sisi 8 cm. QTS ialah lengkok sebuah bulatan berpusat P .

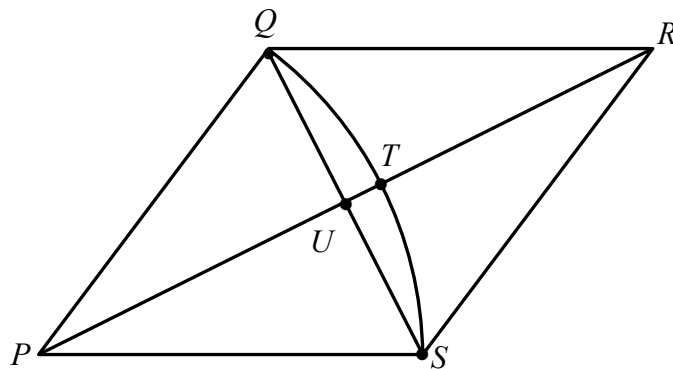


Diagram 17
 Rajah 17

X is a locus of a point which moves such that its distance is constantly 8 cm from point P .

Y is a locus of a point which moves such that it is always equidistant from point Q and point S .

X ialah lokus suatu titik bergerak dengan keadaan jaraknya sentiasa 8 cm dari titik P .

Y ialah lokus suatu titik bergerak dengan keadaan jaraknya sentiasa sama dari titik Q dan titik S .

Which of the points, Q , S , T or U , is the intersection of locus X and locus Y ?

Antara titik Q , S , T dan U , yang manakah persilangan antara lokus X dan lokus Y ?

- A** Q
- B** S
- C** T
- D** U

- 33 In Diagram 18, O is the origin. M is the midpoint of OR and the distance of PN is 12 units.

Dalam Rajah 18, O ialah asalan. M ialah titik tengah bagi OR dan jarak bagi PN ialah 12 unit.

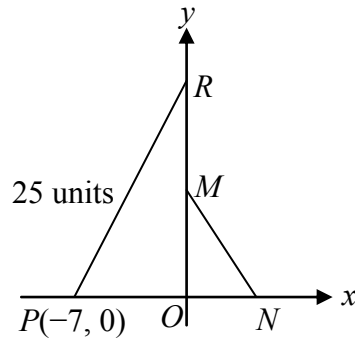


Diagram 18

Rajah 18

Calculate the distance, in unit, of MN .

Hitung jarak, dalam unit, bagi MN .

- A 5
 B 12
 C 13
 D 16
- 34 Diagram 19 shows triangle P and triangle Q .
Rajah 19 menunjukkan segi tiga P dan segi tiga Q .

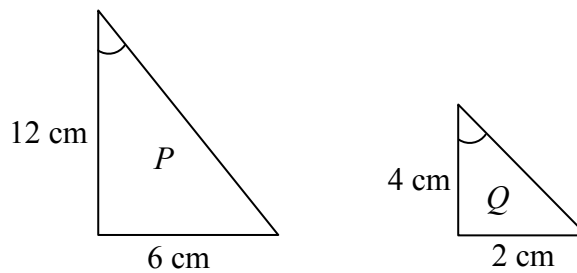


Diagram 19

Rajah 19

Triangle P is the scale drawing for triangle Q using the scale of $1:n$.

Find the value of n .

Segi tiga P ialah lukisan berskala bagi segi tiga Q menggunakan skala $1:n$.

Cari nilai n .

- A $\frac{1}{3}$
 B $\frac{1}{2}$
 C 2
 D 3

35 Diagram 20 shows four points on a Cartesian plane.

Rajah 20 menunjukkan empat titik pada suatu satah Cartes.

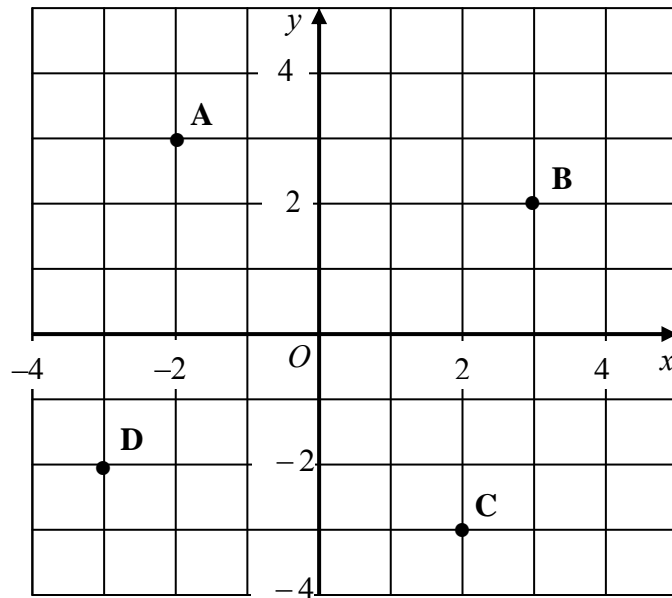


Diagram 20

Rajah 20

Which of the points **A**, **B**, **C** or **D**, represents $(-3, -2)$?

Di antara titik **A**, **B**, **C** dan **D**, yang manakah mewakili $(-3, -2)$?

36 Diagram 21 shows a right prism.

Rajah 21 menunjukkan sebuah prisma tegak.

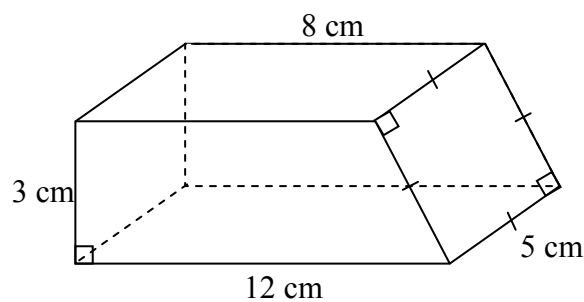


Diagram 21

Rajah 21

Calculate the total surface area, in cm^2 , of the prism.

Hitung jumlah luas permukaan, dalam cm^2 , prisma itu.

- A 160
- B 170
- C 194
- D 200

- 37 Diagram 22 is a pie chart which shows the number of readers for three types of magazines.
Rajah 22 ialah carta pai yang menunjukkan bilangan pembaca bagi tiga jenis majalah.

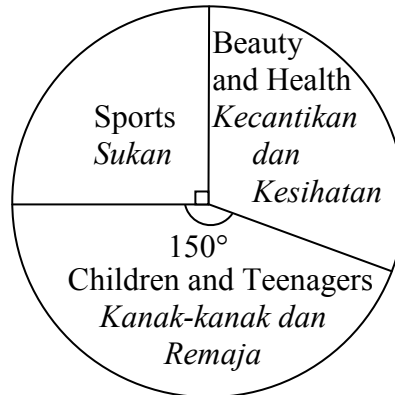


Diagram 22
Rajah 22

The total number of readers is 48.

Calculate the number of readers for Beauty and Health magazine.

Jumlah bilangan pembaca ialah 48.

Hitung bilangan pembaca majalah Kecantikan dan Kesihatan.

- A 12
B 16
C 18
D 20
- 38 In Diagram 23, $KLMN$ is a cyclic quadrilateral.
Dalam Rajah 23, $KLMN$ ialah sisi empat kitaran.

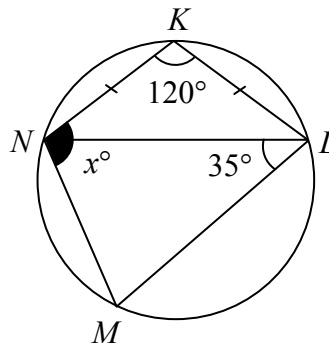


Diagram 23
Rajah 23

Find the value of x .

Cari nilai bagi x .

- A 155
B 115
C 85
D 65

- 39 In Diagram 24, $PQRS$ is a rectangle. QPT and TSR are quadrants of a circle with centre P and S respectively.
 Dalam Rajah 24, $PQRS$ ialah segi empat tepat. QPT dan TSR ialah sukuan bagi bulatan yang berpusat pada P dan S masing-masing.

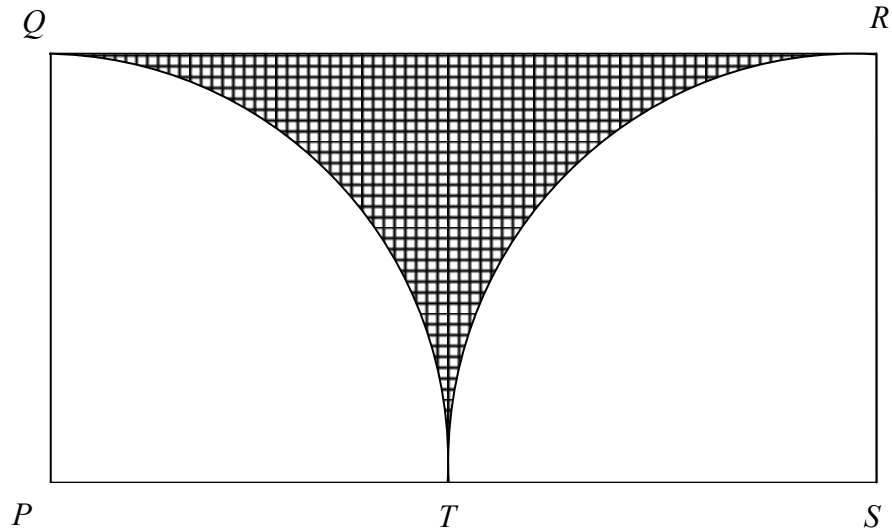


Diagram 24

Rajah 24

It is given that $PS = 28$ cm and T is the midpoint of PS .

Calculate the perimeter, in cm, of the shaded region.

Diberi bahawa $PS = 28$ cm dan T ialah titik tengah bagi PS .

Hitung perimeter, dalam cm, kawasan yang berlorek.

[Use / Guna $\pi = \frac{22}{7}$]

- A 44
- B 50
- C 56
- D 72

- 40 Diagram 25 shows five triangles drawn on a grid of equal squares.
Rajah 25 menunjukkan lima buah segi tiga yang dilukis pada grid segi empat sama.

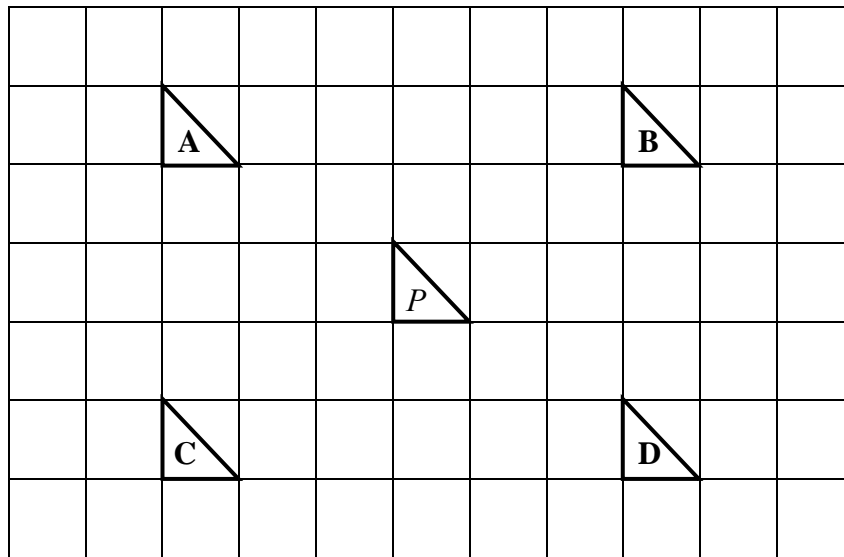


Diagram 25

Rajah 25

Which triangles, **A**, **B**, **C** or **D**, is the image of triangle *P* under the translation $\begin{pmatrix} -3 \\ 2 \end{pmatrix}$?

Antara segi tiga A, B, C dan D, yang manakah imej segi tiga P di bawah translasi $\begin{pmatrix} -3 \\ 2 \end{pmatrix}$?

END OF QUESTION PAPER
KERTAS SOALAN TAMAT

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** or **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, iaitu **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.



JABATAN PELAJARAN NEGERI
NEGERI SEMBILAN DARUL KHUSUS



PRAPENILAIAN MENENGAH RENDAH 2012
MATHEMATICS

50/1
PAPER 1

ANSWERS SCHEME

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

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

SULIT

NO. KAD PENGENALAN

								-									
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ANGKA GILIRAN

--	--	--	--	--	--	--	--	--	--	--	--



**JABATAN PELAJARAN
NEGERI SEMBILAN DARUL KHUSUS**

**PRAPENILAIAN MENENGAH RENDAH 2012 50/2
MATHEMATICS**

Kertas 2

Ogos

1 $\frac{3}{4}$ jam

Satu jam empat puluh lima minit

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

1. Tuliskan nombor kad pengenalan dan angka giliran anda pada petak yang disediakan.
2. Kertas soalan ini adalah dalam dwibahasa.
3. Soalan dalam bahasa Inggeris mendahului soalan yang sepadan dalam bahasa Melayu.
4. Calon dibenarkan menjawab keseluruhan atau sebahagian soalan sama ada dalam bahasa Inggeris atau bahasa Melayu.
5. Calon dikehendaki membaca maklumat di halaman belakang kertas soalan ini.

Untuk Kegunaan Pemeriksa		
Kod Pemeriksa :		
Soalan	Markah penuh	Markah diperolehi
1	2	
2	2	
3	3	
4	3	
5	2	
6	2	
7	3	
8	3	
9	3	
10	3	
11	3	
12	3	
13	3	
14	3	
15	3	
16	5	
17	4	
18	4	
19	3	
20	3	
Jumlah	60	

Kertas soalan ini mengandungi 24 halaman bercetak .

[Lihat halaman sebelah

SULIT

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**

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

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

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

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

5 Midpoint / Titik tengah

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

$$6 \quad \text{Average speed} = \frac{\text{total distance}}{\text{total time}}$$

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

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

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

8 Pythagoras's theorem / teorem Pythagoras

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

SHAPE 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 segi tiga = $\frac{1}{2} \times$ tapak \times tinggi
- 3 Area of parallelogram = base \times height
Luas segi empat 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
Isi padu prisma tegak = luas keratan rentas \times panjang
- 10 Volume of cuboid = length \times width \times height
Isi padu kuboid = panjang \times lebar \times tinggi
- 11 Volume of cylinder = $\pi r^2 h$
Isi padu silinder = $\pi j^2 t$
- 12 Volume of cone = $\frac{1}{3} \pi r^2 h$
Isi padu kon = $\frac{1}{3} \pi j^2 t$

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

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

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

Isi padu piramid tegak = $\frac{1}{3} \times \text{luas tapak} \times \text{tinggi}$

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

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

16 $\frac{\text{Length of arc}}{\text{Circumference}} = \frac{\text{Angle at centre}}{360^\circ}$

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

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

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

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

SULIT

5

50/2

For
Examiner's
Use

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

- 1 Calculate the value of :
Hitung nilai bagi :

$$120 - 4 (48 + 16 \div 8)$$

[2 marks]
[2 markah]

Answer / *Jawapan*:

1
2

- 2 Calculate the value of $(4.8 + 5.7) \times 1\frac{1}{5}$ and express the answer as a decimal.

[2 marks]

Hitung nilai bagi $(4.8 + 5.7) \times 1\frac{1}{5}$ dan ungkapkan jawapan sebagai nombor perpuluhan.

[2 markah]

Answer / *Jawapan* :

2
2

[Lihat halaman sebelah
SULIT

For
Examiner's
Use

SULIT

6

50/2

- 3 (a) Find the value of :
Cari nilai bagi :

$$\sqrt{0.64}$$

- (b) Calculate the value of :
Hitung nilai bagi :

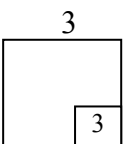
$$\left(1\frac{1}{4} + \sqrt[3]{\frac{27}{64}}\right)^2$$

[3 marks]
[3 markah]

Answer / Jawapan :

(a)

(b)



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

(a) $3k = -27$

(b) $\frac{2x}{3} - 6 = 4$

[3 marks]
[3 markah]

Answer / Jawapan :

(a)

(b)

4
3

- 5 Diagram 5 shows two pentagons, $PQRST$ and $P'Q'R'S'T'$, drawn on a Cartesian plane. $P'Q'R'S'T'$ is the image of $PQRST$ under transformation **H**.
Rajah 5 menunjukkan dua buah pentagon, $PQRST$ dan $P'Q'R'S'T'$, yang dilukis pada satah Cartes. $P'Q'R'S'T'$ ialah imej bagi $PQRST$ di bawah penjelmaan **H**.

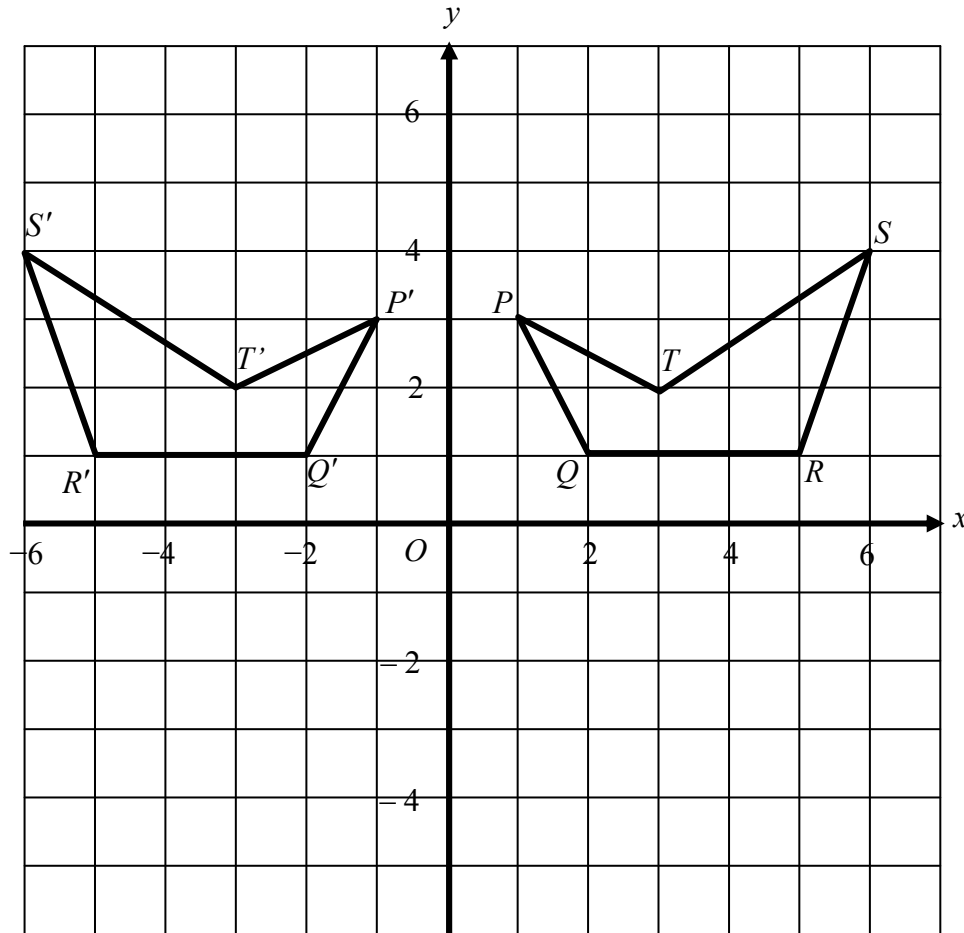


Diagram 5
Rajah 5

Describe in full transformation **H**.

[2 marks]

Huraikan selengkapnya penjelmaan **H**.

[2 markah]

Answer / Jawapan :

5
2

- 6 Diagram 6 shows two triangles, S and S' , drawn on a Cartesian plane. S' is the image of S under an enlargement.

Rajah 6 menunjukkan dua segi tiga, S dan S' , dilukis pada satah Cartes. S' ialah imej bagi S di bawah suatu pembesaran.

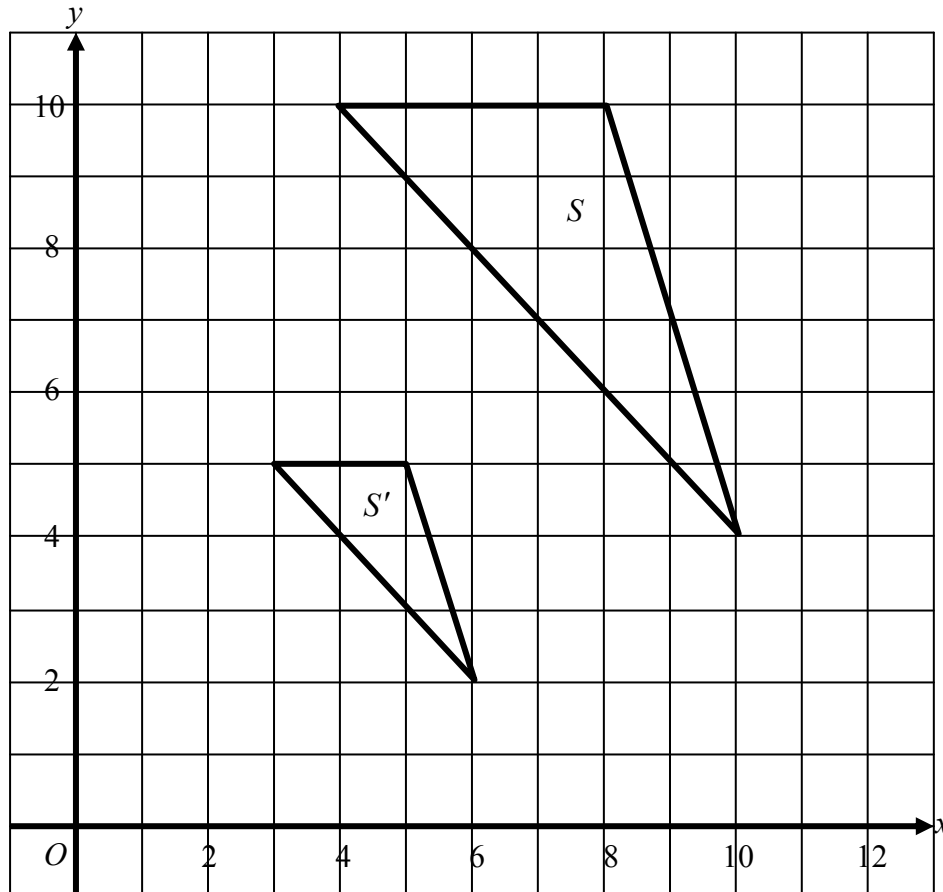


Diagram 6

Rajah 6

- (a) On Diagram 6, mark P as the centre of enlargement.
Pada Rajah 6, tandakan P sebagai pusat pembesaran.
- (b) State the scale factor of the enlargement.
Nyatakan faktor skala bagi pembesaran itu.

[2 marks]
[2 markah]

Answer / Jawapan :

- (b)

6

2

[Lihat halaman sebelah

SULIT

For
Examiner's
Use

SULIT

10

50/2

- 7 Factorise completely each of the following expressions :
Faktorkan selengkapnya tiap-tiap ungkapan berikut :

(a) $4p - 16$

(b) $5m^2 - 20m + 20$

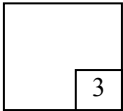
[3 marks]
[3 markah]

Answer / Jawapan :

(a)

(b)

7



- 8 (a) Expand :
Kembangkan :

$$5m(6 - n)$$

- (b) Simplify :
Ringkaskan :

$$(4p - q)^2 - 2p^2$$

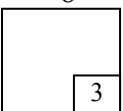
[3 marks]
[3 markah]

Answer / Jawapan :

(a)

(b)

8



SULIT

11

50/2

For
Examiner's
Use

- 9 Express $\frac{1}{6x} - \frac{2-y}{18xy}$ as a single fraction in its simplest form. [3 marks]

Ungkapkan $\frac{1}{6x} - \frac{2-y}{18xy}$ sebagai satu pecahan tunggal dalam bentuk termudah. [3 markah]

Answer / Jawapan :

9

3

- 10 List all the integer values of p which satisfy both the inequalities $2p \leq 6$ and $3 - p < 5$. [3 marks]

Senaraikan semua nilai integer p yang memuaskan kedua-dua ketaksamaan $2p \leq 6$ dan $3 - p < 5$. [3 markah]

Answer / Jawapan :

10

3

[Lihat halaman sebelah
SULIT

For
Examiner's
Use**SULIT****12****50/2**

11 Given $\frac{x-y}{2} = 3+5y$, express y in terms of x . [3 marks]

Diberi $\frac{x-y}{2} = 3+5y$, ungkapkan y dalam sebutan x . [3 markah]

Answer / Jawapan :

11

3

12 (a) Simplify :
Permudahkan :

$$y^5 \div y^{-2}$$

(b) Find the value of :
Cari nilai bagi :

$$\frac{(3^2)^3 \times 9^{-2}}{3^3}$$

[3 marks]
[3 markah]

Answer / Jawapan :

(a)

(b)

12

3

- 13 Diagram 13 shows the marks obtained by 20 students in a Mathematics quiz.

Rajah 13 menunjukkan markah yang diperolehi oleh 20 orang murid dalam kuiz Matematik.

1, 2, 2, 3, 5, 4, 2, 1, 1, 3, 4, 2, 1, 2, 2, 5, 4, 5, 3, 3

Diagram 13

Rajah 13

- (a) Using the data, complete the frequency table in the answer space.
Menggunakan data itu, lengkapkan jadual kekerapan pada ruang jawapan.
- (b) Calculate the mean.
Hitung min.

[3 marks]
[3 markah]

Answer / *Jawapan* :

- (a)

Marks <i>Markah</i>	Frequency <i>Kekerapan</i>
1	4
2	
3	
4	
5	

Table 13

Jadual 13

- (b)

13

3

[Lihat halaman sebelah

SULIT

- 14 Table 14 shows the number of cups of tea sold by three restaurants.
Jadual 14 menunjukkan bilangan cawan teh dijual di tiga buah restoran.

Restaurant <i>Restoran</i>	Tea <i>Teh</i>
A	30
B	m
C	50

Table 14
Jadual 14

It is given that 150 cups were sold on a particular day.
Diberi bahawa 150 cawan telah dijual pada suatu hari tertentu.

- (a) Find the value of m .
Cari nilai m .
- (b) Hence, complete the bar chart in Diagram 14 in the answer space by using the data in Table 14.
Seterusnya, lengkapkan carta palang pada Rajah 14 pada ruang jawapan dengan menggunakan data di Jadual 14.

[3 marks]
[3 markah]

Answer / Jawapan :

(a)

(b)

Restaurants
Restoran

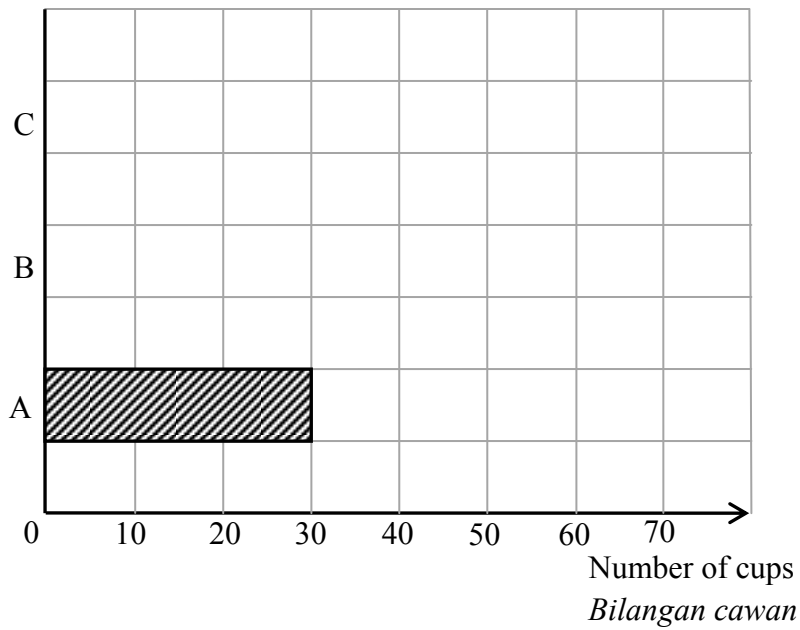


Diagram 14
Rajah 14

14
3

- 15 In Diagram 15, PQR and PTS are straight lines. QT is parallel to RS .
 Dalam Rajah 15, PQR dan PTS ialah garis lurus. QT adalah selari dengan RS .

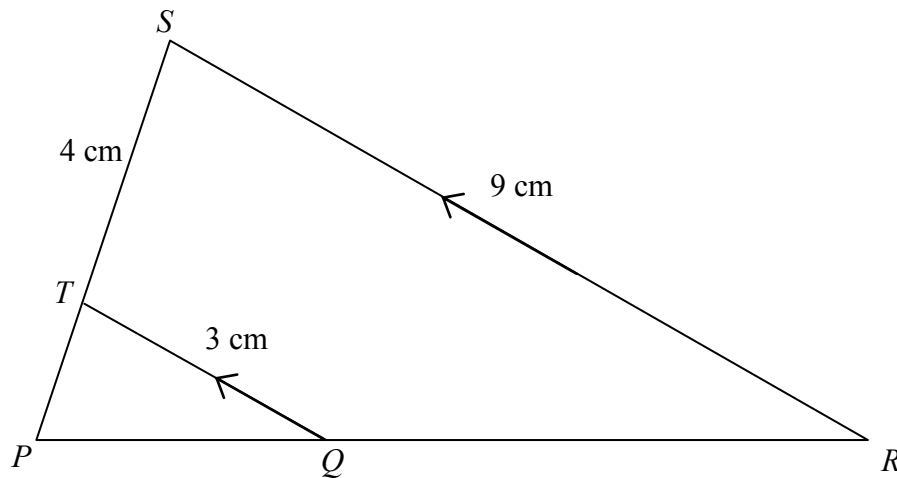


Diagram 15
Rajah 15

Find the length, in cm, of PS .
 Cari panjang, dalam cm, PS .

[3 marks]
[3 markah]

Answer / Jawapan :

15



- 16 Diagram 16.1 shows a quadrilateral, $ABCD$.
Rajah 16.1 menunjukkan sebuah sisi empat, $ABCD$.

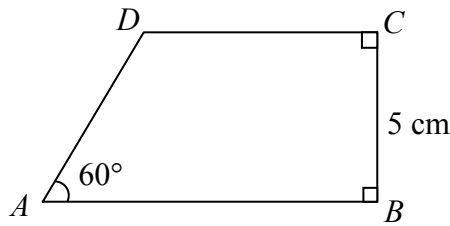


Diagram 16.1
Rajah 16.1

- (a) Using only a ruler and a pair of compasses, construct Diagram 16.1 using the measurements given.
Begin from the straight line AB provided in the answer space.
Dengan menggunakan pembaris dan jangka lukis sahaja, bina Rajah 16.1 mengikut ukuran yang diberi.
Mula dengan garis lurus AB yang disediakan di ruang jawapan.
- (b) Based on the diagram constructed in 16.2, measure the length, in cm, of AD .
Berdasarkan rajah yang dibina di 16.2, ukur panjang, dalam cm, bagi AD .

[5 marks]
[5 markah]

Answer / Jawapan :

(a)

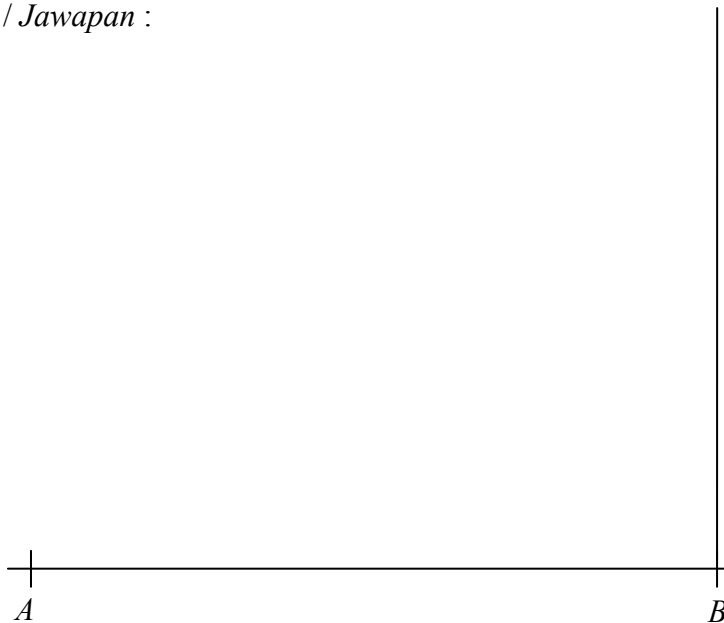


Diagram 16.2
Rajah 16.2

(b)

16
5

[Lihat halaman sebelah
SULIT

- 17 (a) Diagram 17.1 shows rectangle, $PRSU$. Q and T are midpoints of line PR and SU respectively.
Rajah 17.1 menunjukkan sebuah segi empat tepat, $PRSU$. Q dan T ialah titik tengah bagi garis PR dan SU masing-masing.

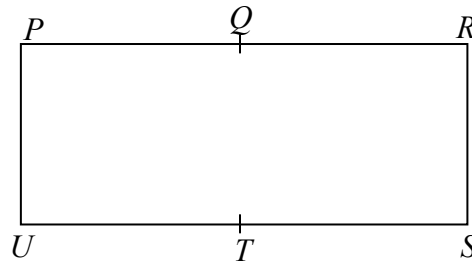


Diagram 17.1
Rajah 17.1

X is moving point inside the rectangle such that it is always equidistant from line PU and line RS .

By using the letters in Diagram 17.1, state the locus of X .

X adalah suatu titik yang bergerak di dalam segi empat tepat dengan keadaan jaraknya sentiasa sama dari garis PU dan garis RS .

Dengan menggunakan huruf pada Rajah 17.1, nyatakan lokus bagi X .

- (b) Diagram 17.2 in the answer space shows regular hexagon $FGHIJK$. Y and Z are two moving points inside the hexagon.

Rajah 17.2 di ruang jawapan menunjukkan sebuah heksagon sekata $FGHIJK$.

Y dan Z adalah dua titik yang bergerak di dalam heksagon itu.

On Diagram 17.2, draw

Pada Rajah 17.2, lukis

- (i) the locus of the point Y which moves such that it is always equidistant from line KJ and line GH .
lokus bagi titik Y yang bergerak dengan keadaan jaraknya adalah sentiasa sama dari garis KJ dan garis GH .
- (ii) the locus of the point Z which moves such $ZF = FG$.
lokus bagi titik Z yang bergerak dengan keadaan $ZF = FG$.
- (c) Hence, mark with the symbol \otimes the intersection of the locus of Y and the locus of Z .
Seterusnya, tandakan dengan simbol \otimes kedudukan bagi persilangan lokus Y dan lokus Z itu.

[4 marks]

[4 markah]

Answer / Jawapan :

(a)

(b) (i), (ii)

(c)

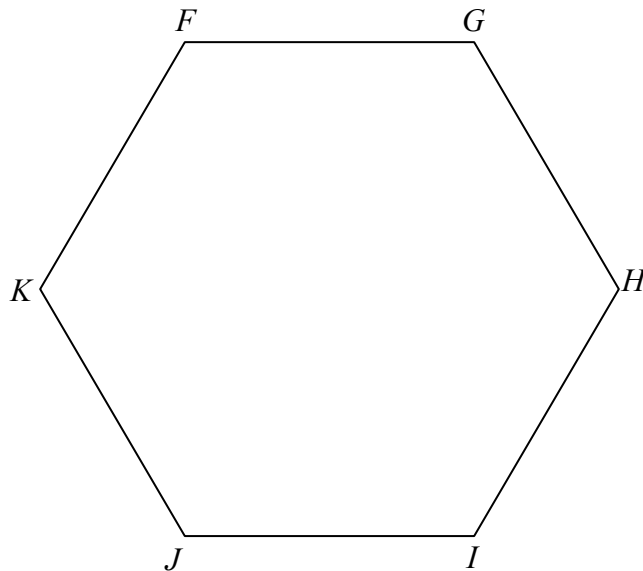
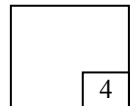


Diagram 17.2
Rajah 17.2

17



[Lihat halaman sebelah
SULIT

- 18** Use the graph paper on page 21 to answer this question.
Guna kertas graf di halaman 21 untuk menjawab soalan ini.

Table 18 shows the values of two variables, x and y , of a function.
Jadual 18 menunjukkan nilai-nilai dua pembolehubah, x dan y , bagi suatu fungsi.

x	-3	-2	-1	0	1	2	3
y	29	12	7	8	9	4	-13

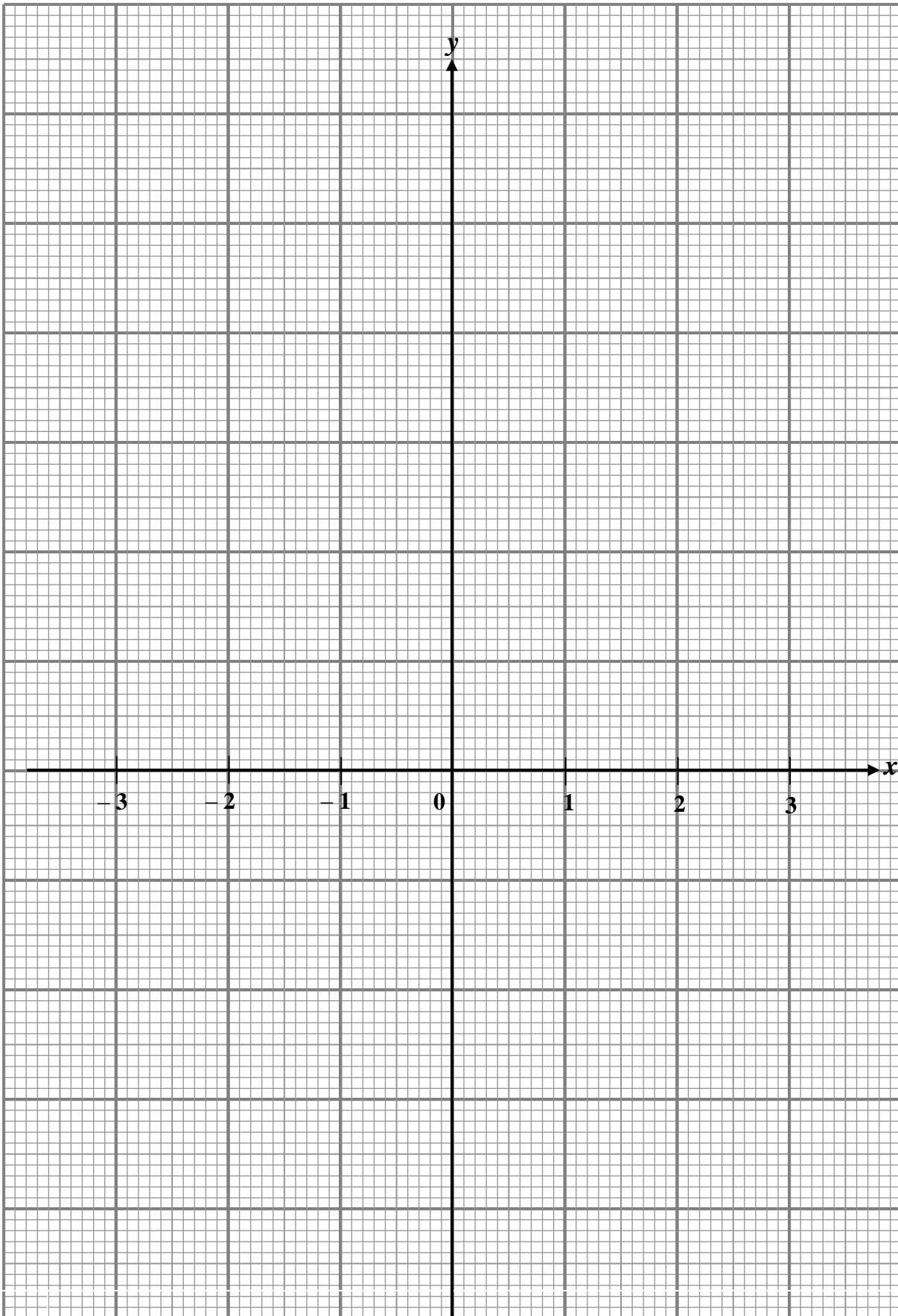
Table 18
Jadual 18

The x -axis and the y -axis are provided on the graph paper on page 21.
Paksi- x dan paksi- y telah disediakan pada kertas graf di halaman 21.

- (a) By using a scale of 2 cm to 5 units, complete and label the y -axis.
Dengan menggunakan skala 2 cm kepada 5 unit, lengkap dan labelkan paksi- y .
- (b) Based on Table 18, plot all the points on the graph paper.
Berdasarkan Jadual 18, plot semua titik pada kertas graf itu.
- (c) Hence, draw the graph of the function.
Seterusnya, lukis graf fungsi itu.

[4 marks]
[4 markah]

Graph for Question 18
Graf untuk Soalan 18



18
4

[Lihat halaman sebelah

- 19 Diagram 19 shows a polygon.
Rajah 19 menunjukkan sebuah poligon.

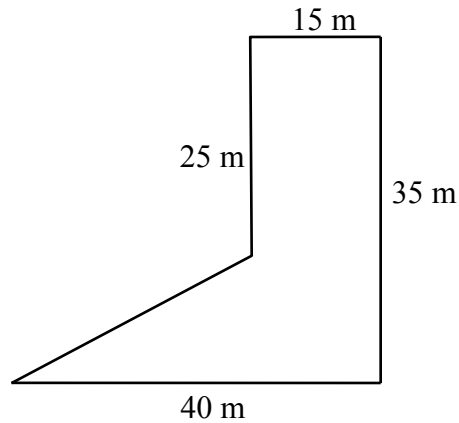


Diagram 19
Rajah 19

On the grid in the answer space, redraw the polygon using a scale 1 : 500. The grid has equal squares with sides of 1 cm.

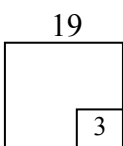
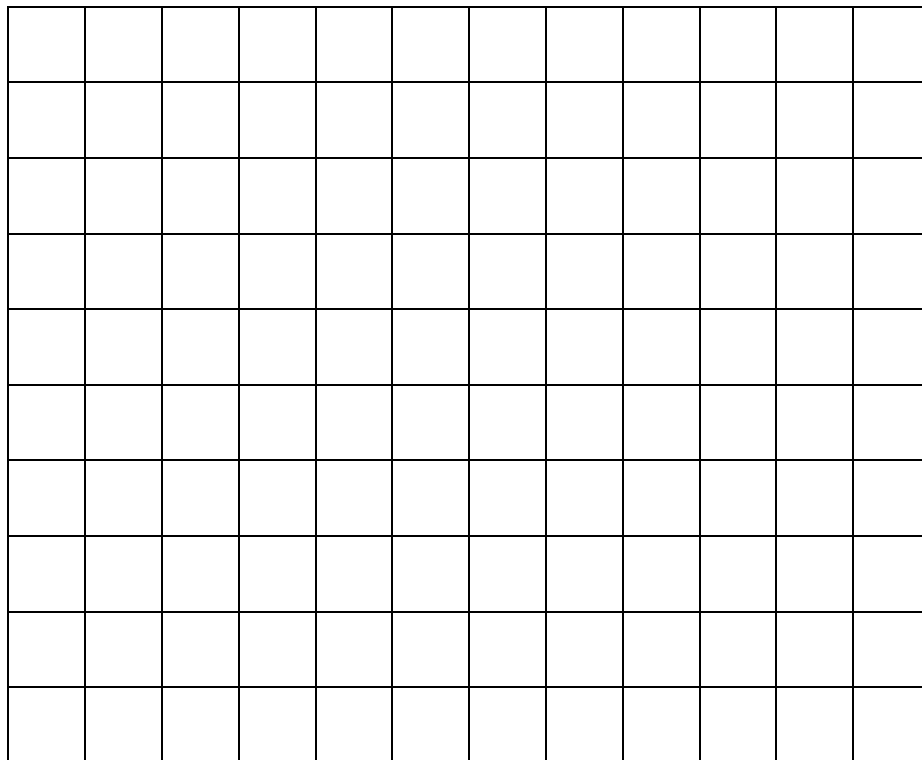
[3 marks]

Pada grid di ruang jawapan, lukis semula rajah itu menggunakan skala 1 : 500.

Grid itu terdiri daripada segi empat sama bersisi 1 cm.

[3 markah]

Answer / Jawapan :



20 In Diagram 20, PQT and SQR are right-angled triangles. PQR and STQ are straight lines.

Dalam Rajah 20, PQT dan SQR ialah segi tiga bersudut tegak. PQR dan STQ ialah garis lurus.

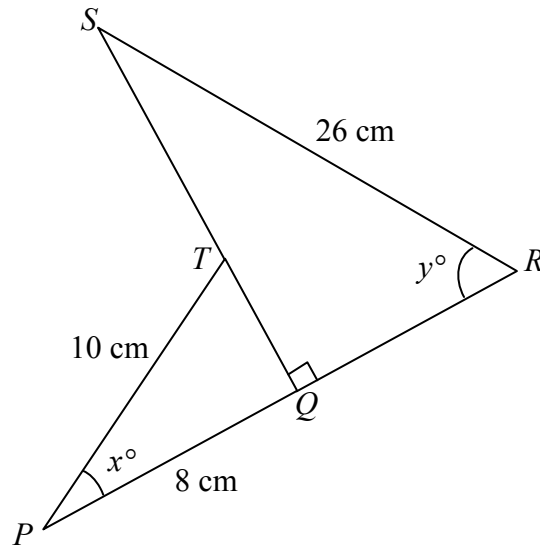


Diagram 20

Rajah 20

(a) Find the value of $\sin x^\circ$.

Cari nilai bagi $\sin x^\circ$.

(b) Given that $\cos y^\circ = \frac{5}{13}$, calculate the length, in cm, of ST .

Diberi bahawa $\cos y^\circ = \frac{5}{13}$, hitung panjang, dalam cm, bagi ST .

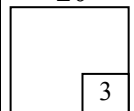
[3 marks]
[3 markah]

Answer / Jawapan :

(a)

(b)

20



END OF QUESTION PAPER
KERTAS SOALAN TAMAT

INFORMATION FOR CANDIDATES

MAKLUMAT UNTUK CALON

1. This question paper consists of 20 questions.
Kertas soalan ini mengandungi 20 soalan.
2. Answer **all** questions.
*Jawab **semua** soalan.*
3. Write your answers clearly in the spaces provided in the question paper.
Jawapan anda hendaklah ditulis pada ruang jawapan yang disediakan dalam kertas soalan ini.
4. Show your working. It may help you to get marks.
Tunjukkan langkah-langkah penting dalam kerja mengira anda. Ini boleh membantu anda untuk mendapatkan markah.
5. If you wish to change your answer, neatly cross out the answer that you have done. Then write down the new answer.
Jika anda hendak menukar jawapan, batalkan jawapan yang telah dibuat. Kemudian tulis jawapan yang baru.
6. The diagrams in the questions provided are not drawn to scale unless stated.
Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan.
7. The marks allocated for each question are shown in brackets.
Markah yang diperuntukkan bagi setiap soalan ditunjukkan dalam kurungan.
8. A list of formulae is provided on pages 2 to 4.
Satu senarai rumus disediakan di halaman 2 hingga 4.
9. The usage of calculator is **not** allowed.
*Penggunaan kalkulator **tidak** dibenarkan.*
10. This question paper must be handed in at the end of the examination.
Kertas soalan ini mesti diserahkan pada akhir peperiksaan.



**JABATAN PELAJARAN
NEGERI SEMBILAN DARUL KHUSUS**

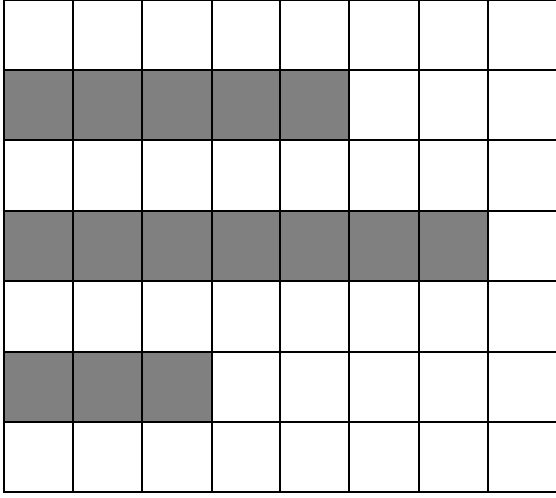
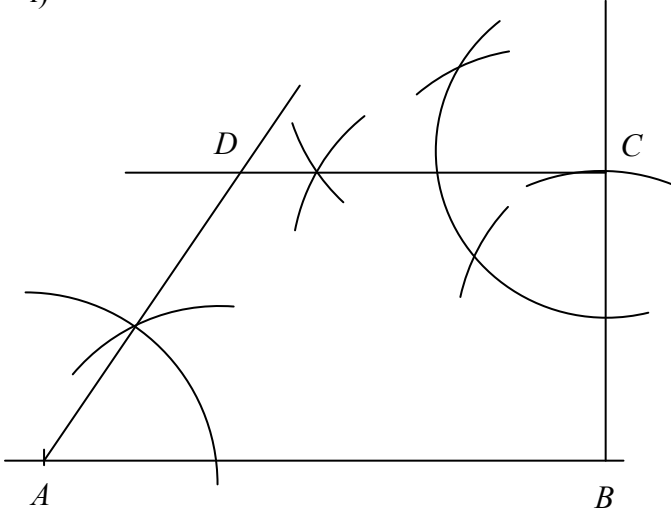
**SKEMA PEMARKAHAN
PRAPENILAIAN MENENGAH RENDAH
TAHUN 2012
MATEMATIK
KERTAS 2**

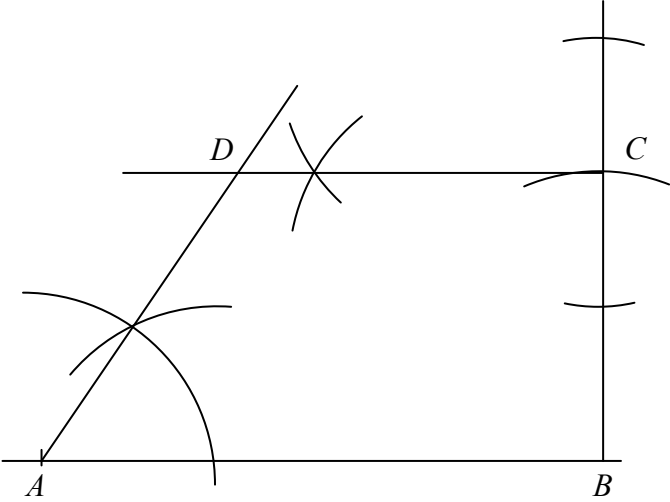
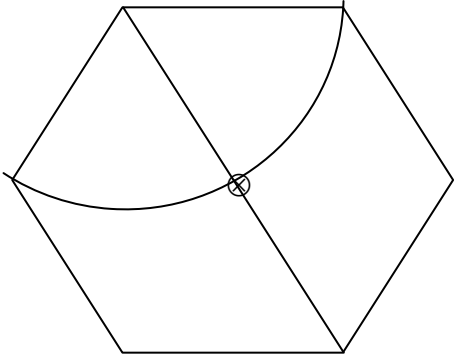
SKEMA PEMARKAHAN PRAPENILAIAN MENENGAH RENDAH
TAHUN 2012

Q	Marking Scheme		Full marks
1	200 -80 Seen 50 give K1	K1 N1	2
2	10·5 or $\frac{21}{2}$ 12·6	K1 N1	2
3	a) 0·8 b) $\frac{5}{4} + \frac{3}{4}$ or $\frac{8}{4}$ or 2 4	N1 K1 N1	3
4	a) -9 b) $\frac{2x}{3} = 4 + 6$ or $\frac{2x}{3} = 10$ or $2x = 12 + 18$ or $2x = 30$ 15	N1 K1 N1	3
5	Reflection or pantulan or pembalikan y-axis or $x = 0$	P1 P1	2

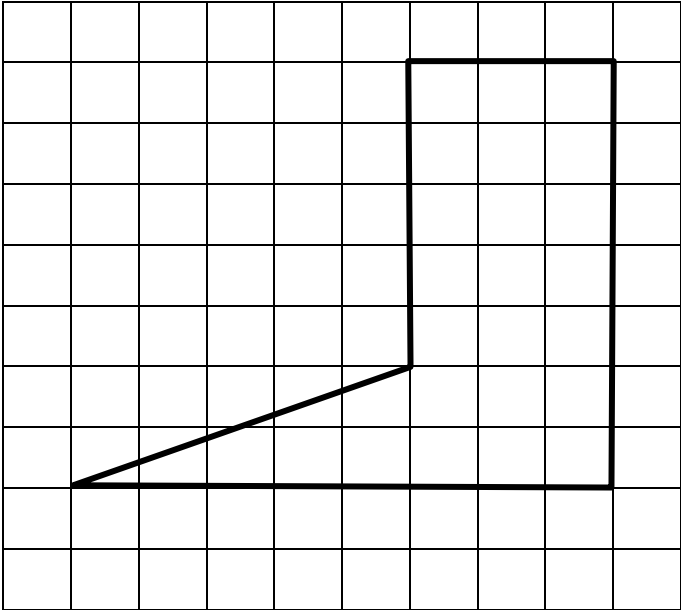
Q	Marking Scheme		Full marks
6	<p>a) Centre of enlargement, P plotted correctly at $(2, 0)$</p> <p>b) $\frac{1}{2}$ or $1 : 2$</p> <p>Notes : Accept P1</p> <ol style="list-style-type: none"> Two intersecting lines drawn to determine the centre. Accuracy $\leq \frac{1}{4}$ of the sq. grid 	<p>P1</p> <p>P1</p>	2
7	<p>a) $4(p - 4)$</p> <p>b) $5(m^2 - 4m + 4)$ or $(5m - 10)(m - 2)$</p> <p>$5(m - 2)(m - 2)$ or $5(m - 2)^2$</p>	<p>P1</p> <p>P1</p> <p>N1</p>	3
8	<p>a) $30m - 5mn$</p> <p>b) $16p^2 - 4pq - 4pq + q^2$</p> <p>$14p^2 - 8pq + q^2$</p>	<p>N1</p> <p>K1</p> <p>N1</p>	3
9	<p>$\frac{1(3y)}{6x(3y)} - \frac{2 - y}{18xy}$ or $\frac{3y - (2 - y)}{18xy}$ or $\frac{3y - 2 + y}{18xy}$ or</p> <p><i>equivalent</i></p> <p>$\frac{4y - 2}{18xy}$ or <i>equivalent</i></p> <p>$\frac{2y - 1}{9xy}$</p>	<p>K1</p> <p>K1</p> <p>N1</p>	3

Q	Marking Scheme		Full marks												
10	$p \leq 3$ $p > -2$ $-1, 0, 1, 2, 3$	K1 K1 N1	3												
11	$6 + 10y = x - y$ $10y + y = x - 6$ $\frac{x - 6}{11}$	P1 P1 N1	3												
12	a) y^7 b) 3^{6-4-3} or $\frac{3^2}{3^3}$ or 3^{-1} or $\frac{9}{27}$ $\frac{1}{3}$	N1 K1 N1	3												
13	<table border="1" data-bbox="511 1203 989 1432"> <thead> <tr> <th>Donation</th> <th>Frequency</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>4</td> </tr> <tr> <td>2</td> <td>6</td> </tr> <tr> <td>3</td> <td>4</td> </tr> <tr> <td>4</td> <td>3</td> </tr> <tr> <td>5</td> <td>3</td> </tr> </tbody> </table> a) Frequency, all correct b) $\frac{4 + 12 + 12 + 12 + 15}{20}$ or $\frac{55}{20}$ 2.75 or $\frac{11}{4}$ or $2\frac{3}{4}$	Donation	Frequency	1	4	2	6	3	4	4	3	5	3	N1 K1 N1	3
Donation	Frequency														
1	4														
2	6														
3	4														
4	3														
5	3														

Q	Marking Scheme		Full marks
14	<p>a) 70</p> <p>b)</p> 	<p>N1</p> <p>N1</p> <p>N1</p>	<p>3</p>
15	<p>$\frac{x}{3} = \frac{x+4}{9}$ or $\frac{x}{x+4} = \frac{3}{9}$ or equivalent</p> <p>$PT = 2$ or seen on the diagram</p> <p>6</p>	<p>P1</p> <p>P1</p> <p>N1</p>	<p>3</p>
16	<p>i)</p> 		

Q	Marking Scheme		Full marks
	<p>ii)</p>  <p>a) Correct construction for 60° Line segment $BC = 5$ cm Correct construction for the perpendicular line to line BC Quadrilateral $ABCD$ complete drawn</p> <p>b) 5.8 ± 0.1 cm</p>	<p>N1 N1 N1 N1 N1</p>	<p>5</p>
<p>17</p>	<p>a) QT or TQ</p> <p>Note : Q, T or Q and T, P0</p> <p>b)</p> 	<p>P1</p>	

Q	Marking Scheme		Full marks
	<p>b) Locus of Y correctly drawn Locus of Z correctly drawn Intersection of Y and Z correctly marked.</p> <p>Notes :</p> <ol style="list-style-type: none"> 1. Do not accept sketches for locus Y and Z 2. Dotted line, deduct 1 mark from KN marks. 3. Ignore drawing outside circle. 	<p>K1 K1 N1</p>	<p>4</p>
<p>18</p>	<p>a) Uniform scale on the y-axis (Accept scale without negative if plotted point are correct)</p> <p>b) All 7 points correctly plotted Smooth curve passes through all the 7 points</p> <p>Note :</p> <ol style="list-style-type: none"> 1. Allow K2 if points are not plotted but curve passes through all the 7 points 2. 5 or 6 points plotted correctly <i>or</i> curve passes through 5 <i>or</i> 6 points, award K1 3. If scale is not written but all the points plotted correctly, award K1K2. 4. For other scale on the y-axis, deduct 1 mark from total marks obtained. 	<p>K1 K2 N1</p>	<p>4</p>

Q	Marking Scheme		Full Marks
19	 <p>Any one side correctly drawn</p> <p>Any two corresponding sides correctly drawn</p> <p>Correct and complete drawing</p> <p>Note : Complete drawing using dotted lines, award K1</p>	<p>K1</p> <p>K1</p> <p>N1</p>	<p>3</p>
20	<p>a) $\frac{3}{5}$</p> <p>b) $QS = 24$ or $QR = 10$ (or seen on the diagram)</p> <p>18</p>	<p>N1</p> <p>K1</p> <p>N1</p>	<p>3</p>