

SULIT



JABATAN PELAJARAN NEGERI
NEGERI SEMBILAN DARUL KHUSUS



PENILAIAN TINGKATAN TIGA 2009

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 30 halaman bercetak

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

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

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

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

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

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

8 Pythagoras Theorem / Teorem Pithagoras

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

SHAPE AND SPACE
BENTUK DAN RUANG

- 1 Area of rectangle = length \times width
Luas segiempat 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 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 = $\frac{1}{3} \pi j^2 t$

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

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

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 = $k^2 \times \text{luas objek}$

- 1 54 276 round off to the nearest hundred is

54 276 dibundarkan kepada ratus yang hampir ialah

- A 54 000
- B 54 200
- C 54 300
- D 55 000

- 2 An express bus left town P at 2242 hours and reached town Q at 0855 hours the next day.

Calculate the duration of the journey.

Sebuah bas ekspres bertolak dari bandar P pada jam 2242 dan sampai ke bandar Q pada jam 0855 keesokan harinya.

Hitung tempoh masa perjalanan tersebut.

- A 10 hours 13 minutes
- B 13 hours 18 minutes
- C 13 hours 47 minutes
- D 14 hours 27 minutes

- 3 40% of 240 students in Form 3 are girls. $\frac{3}{4}$ of the girls and $\frac{2}{3}$ of the boys join a motivation camp.

Calculate the total number of Form 3 students who join the motivation camp.

40% daripada 240 orang pelajar Tingkatan 3 adalah perempuan. $\frac{3}{4}$ daripada pelajar perempuan dan $\frac{2}{3}$ daripada pelajar lelaki menyertai kem motivasi.

Hitung jumlah pelajar Tingkatan 3 yang menyertai kem motivasi itu.

- A 96
- B 160
- C 168
- D 180

- 4 Diagram 1 is part of a number line.

Rajah 1 adalah sebahagian daripada suatu garis nombor.

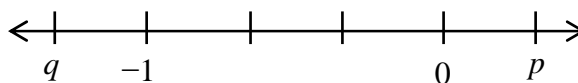


Diagram 1

Rajah 1

Which of the following statements is true?

Antara pernyataan berikut yang manakah benar?

- A $p < q$
 - B $p > q$
 - C $p \leq q$
 - D $p \geq q$
- 5 A group of students took a test. $\frac{2}{5}$ of them obtained grade I and $\frac{1}{2}$ of them obtained grade II. The remaining 15 students obtained grade III.

Find the total number of students who took the test.

Sekumpulan pelajar telah menduduki suatu ujian. $\frac{2}{5}$ daripadanya mendapat gred I dan $\frac{1}{2}$ daripadanya mendapat gred II. Selebihnya seramai 15 orang pelajar mendapat gred III.

Hitungkan jumlah pelajar yang menduduki ujian tersebut.

- A 40
- B 90
- C 130
- D 150

- 6 Diagram 2 shows a sequence of numbers.
Rajah 2 menunjukkan suatu urutan nombor.

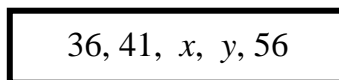


Diagram 2
Rajah 2

Find the value of $x + y$.

Hitung nilai $x + y$.

- A 90
B 97
C 100
D 101
- 7 Amir bought 95 m of fencing for his 6 equal plots of land. After fencing up all the plots of land, there was a remainder of 2900 cm.
Amir membeli 95 m dawai pagar untuk 6 bidang tanah yang sama saiz. Selepas memagar kesemua tanahnya, baki dawai pagar ialah 2900 cm.
- Calculate the length, in m, of fencing used for each plot of land.
Hitung panjang, dalam m, pagar yang digunakan bagi setiap bidang tanah itu.
- A 10
B 11
C 66
D 124
- 8 Simplify :
Permudahkan :

$$32^{\frac{1}{5}} \times 16^{\frac{1}{4}} \div 2^{-2}.$$

- A 2^0
B 2^2
C 2^4
D 2^8

- 9 In Diagram 3, RST is a straight line.

Dalam Rajah 3, RST ialah garis lurus.

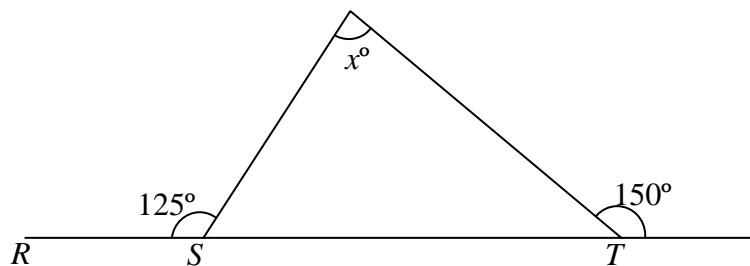


Diagram 3
Rajah 3

Find the value of x .

Cari nilai x .

- A 95
B 85
C 55
D 25
- 10 0.468×1.45 to 2 decimal places is
 0.468×1.45 kepada 2 tempat perpuluhan ialah
- A 0.60
B 0.67
C 0.68
D 0.70
- 11 Given that $6m = 4n + 5$, express n in terms of m .
Diberi bahawa $6m = 4n + 5$, ungkapkan n dalam sebutan m .

- A $\frac{6m - 5}{4}$
B $\frac{5 - 6m}{4}$
C $\frac{6m + 5}{4}$
D $\frac{6m}{4} + 5$

- 12 Diagram 4 is drawn on a square grid. Polygon II is the image of polygon I under a certain enlargement.

Rajah 4 dilukis pada grid segiempat sama. Poligon II adalah imej kepada poligon I di bawah suatu pembesaran.

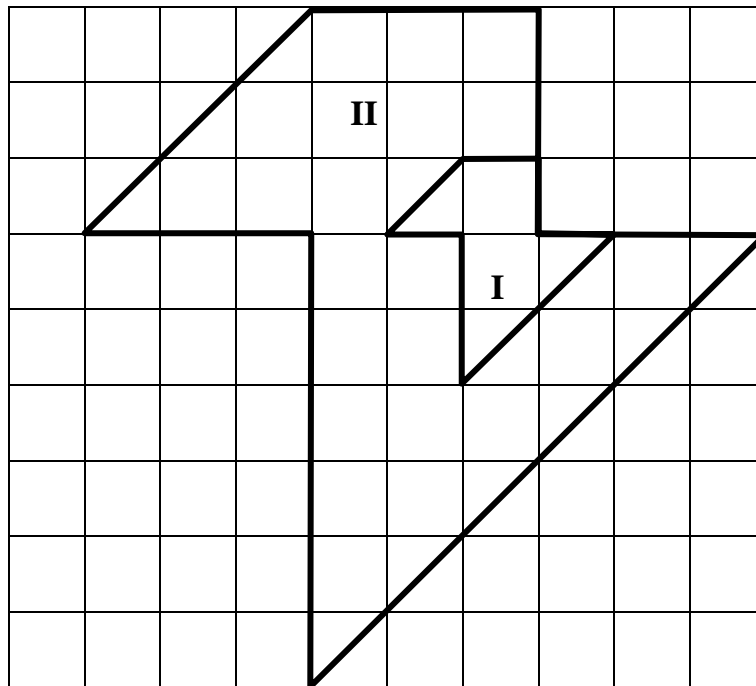


Diagram 4

Rajah 4

Find the scale factor of the enlargement.

Cari faktor skala pembesaran itu.

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

- 13 In Diagram 5, $PQRTU$ is a regular pentagon and RST is an equilateral triangle.

Dalam Rajah 5, $PQRTU$ ialah sebuah pentagon sekata dan RST ialah sebuah segitiga sama sisi.

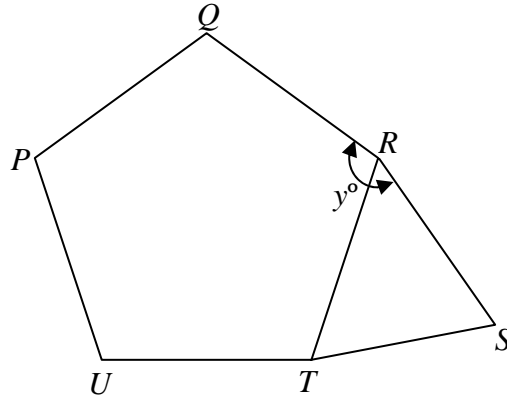


Diagram 5
Rajah 5

Find the value of y .

Cari nilai y .

- A 108
- B 150
- C 168
- D 178

14 In Diagram 6, $PQRSTU$ is a hexagon and PQW is a straight line.

Dalam Rajah 6, $PQRSTU$ ialah sebuah heksagon dan PQW ialah garis lurus.

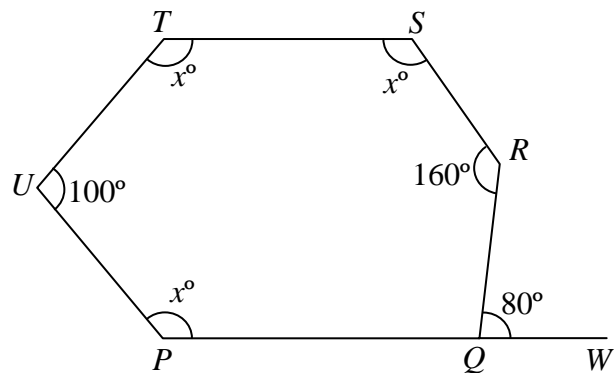


Diagram 6

Rajah 6

Find the value of x .

Cari nilai bagi x .

- A 100
- B 110
- C 120
- D 130

- 15 In Diagram 7, PRT is a triangle. Q and S are the midpoints of PR and RT respectively.

Dalam Rajah 7, PRT ialah sebuah segitiga. Q dan S masing-masing ialah titik tengah PR dan RT .

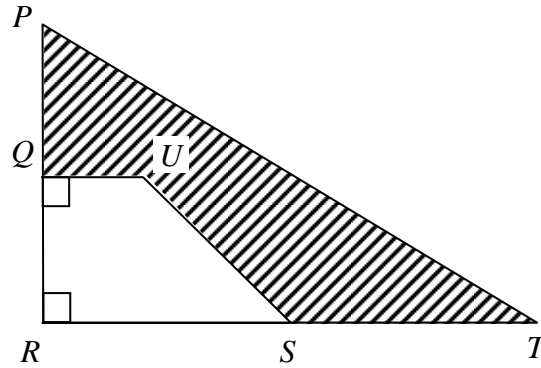


Diagram 7

Rajah 7

PR is 6 cm, QU is 2 cm and RT is 8 cm.
Calculate the area, in cm^2 , of the shaded region.

*PR ialah 6 cm, QU ialah 2 cm dan RT ialah 8 cm.
Hitung luas, dalam cm^2 , kawasan yang berlorek.*

- A 9
B 15
C 24
D 33
- 16 Factorise completely :

Faktorkan selengkapnya :

$$8xy + 24yz$$

- A $2y(4x + 12z)$
B $4y(2x + 6z)$
C $8y(x + 3z)$
D $8xy(1 + 4z)$

- 17 In Diagram 8, PRQ and SRT are right-angled triangles. PRT and QSR are straight lines.

Dalam Rajah 8, PRQ dan SRT ialah segitiga bersudut tegak. PRT dan QSR ialah garis lurus.

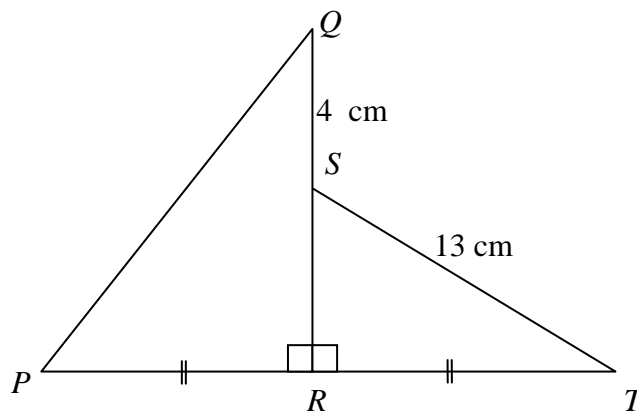


Diagram 8

Rajah 8

It is given that $PR = 12$ cm.
Calculate the length, in cm, of PQ .

*Diberi bahawa $PR = 12$ cm.
Hitung panjang, dalam cm, PQ .*

- A 5
- B 9
- C 15
- D 20

- 18 In Diagram 9, PTU is a right-angled triangle. $PQST$ is a square and QRS is an equilateral triangle. UTS is a straight line.

Dalam Rajah 9, PTU ialah segitiga bersudut tegak. $PQST$ ialah sebuah segiempat sama dan QRS sebuah segitiga sama sisi. UTS ialah garis lurus.

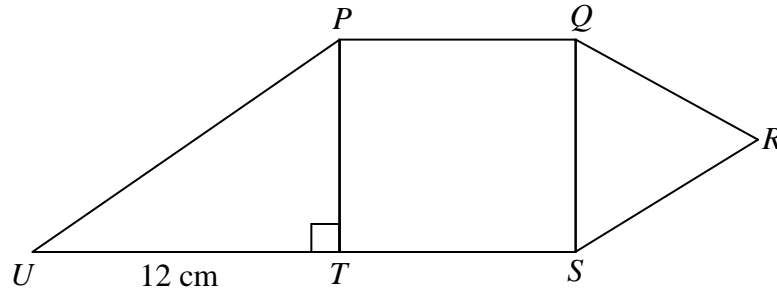


Diagram 9

Rajah 9

The area of the square is 81 cm^2 .
Calculate the perimeter, in cm, of the whole diagram.

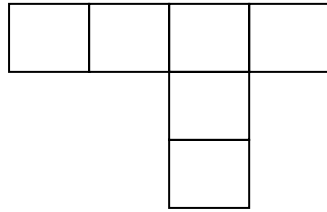
*Luas segiempat sama ialah 81 cm^2 .
Hitung perimeter, dalam cm, seluruh rajah itu.*

- A 45
- B 63
- C 65
- D 72

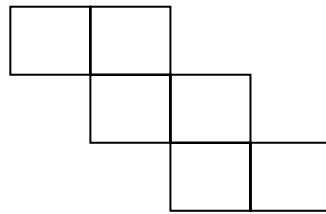
19 Which of the following is the net of a cuboid?

Antara berikut, yang manakah bentangan bagi kuboid?

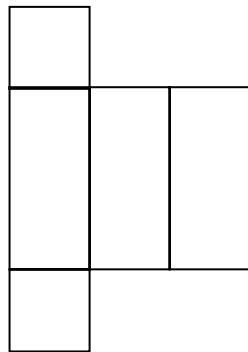
A



B



C



D



- 20 Diagram 10 shows a right cylindrical container P and a cuboidal container Q . The container P is fully filled with water.

Rajah 10 menunjukkan sebuah bekas berbentuk silinder tegak P dan sebuah kuboid Q . Bekas P diisi penuh dengan air.

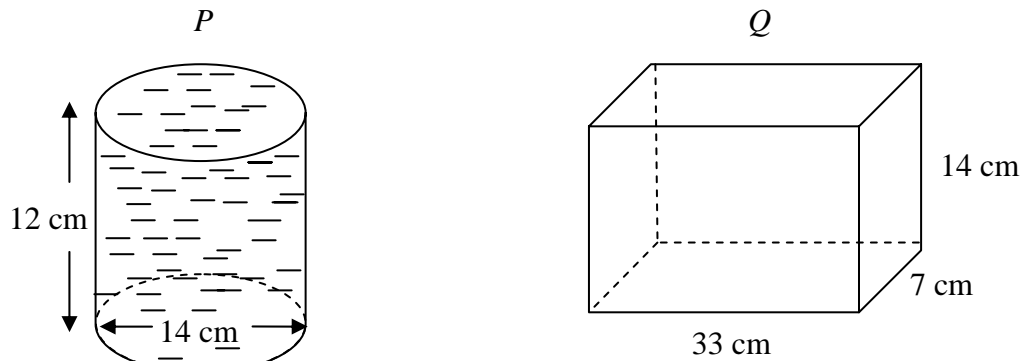


Diagram 10
Rajah 10

Encik Ismail poured all the water from container P into container Q .
Calculate the height, in cm, of water needed to fill up container Q completely.

Encik Ismail menuangkan kesemua air daripada bekas P ke dalam bekas Q .

Hitung tinggi paras air, dalam cm, yang diperlukan lagi untuk memenuhi seluruh bekas Q .

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

- A 2
- B 6
- C 8
- D 9

- 21 The total cost of a pair of shoes and a shirt is RM175. The cost of a pair of shoes is $\frac{5}{7}$ of the total cost.

Calculate the total cost of two shirts and a pair of shoes.

Jumlah kos sepasang kasut dan sehelai baju ialah RM175. Kos sepasang kasut ialah $\frac{5}{7}$ daripada jumlah kos.

Hitung jumlah kos bagi dua helai baju dan sepasang kasut itu.

- A RM125
- B RM225
- C RM275
- D RM300

- 22 Diagram 11 shows two circles of equal size with centres L and N . The two circles touch at M .

Rajah 11 menunjukkan dua buah bulatan sama saiz berpusat di L dan N . Dua bulatan tersebut menyentuh pada M .

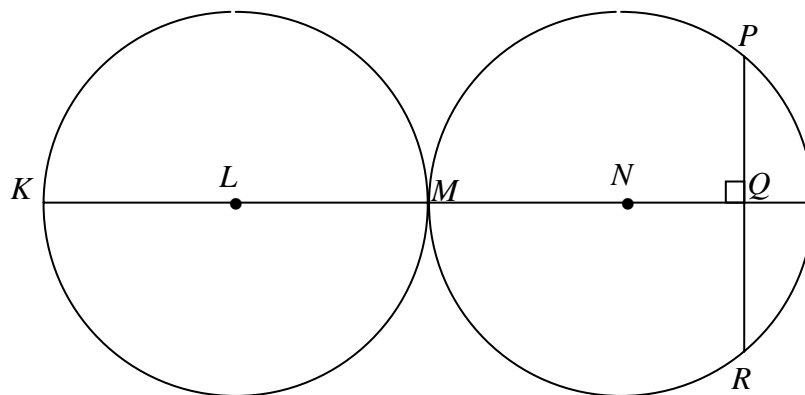


Diagram 11

Rajah 11

If $PR = 6$ cm and $MN = 5$ cm, calculate the length, in cm, of $KLMNQ$.

Jika $PR = 6$ cm dan $MN = 5$ cm, hitung panjang, dalam cm, $KLMNQ$.

- A 17
- B 18
- C 19
- D 20

- 23** In Diagram 12, $KLMN$ is a cyclic quadrilateral.
Dalam Rajah 12, $KLMN$ ialah sisiempat kitaran.

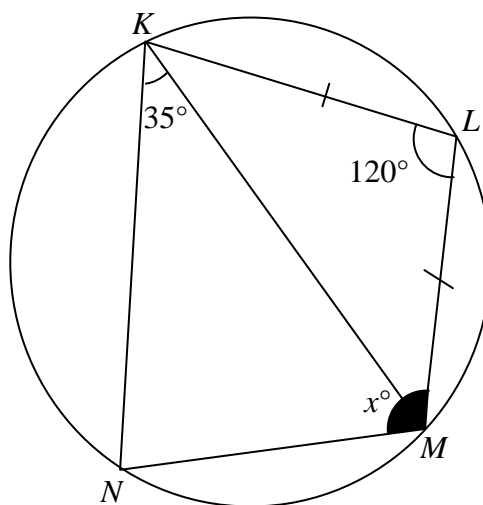


Diagram 12
Rajah 12

Find the value of x .
Cari nilai bagi x .

- A** 155
B 145
C 115
D 95
- 24** Given that the distance between $P(7, -6)$ and $Q(k, -6)$ is 7 units.
 The possible value of k is

*Diberi jarak antara $P(7, -6)$ dan $Q(k, -6)$ ialah 7 unit.
 Nilai k yang mungkin ialah*

- A** -1
B 0
C 1
D 13

25 In Diagram 13, O is the centre of the circle.

Dalam Rajah 13, O ialah pusat bulatan.

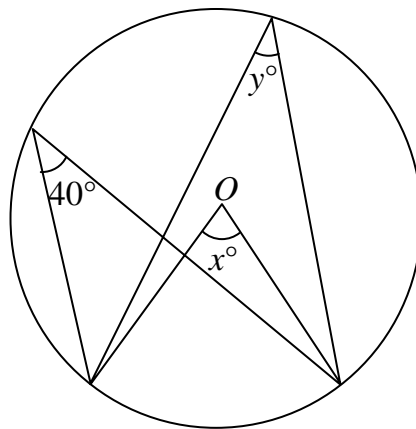


Diagram 13

Rajah 13

Find the value of $x + y$.

Cari nilai $x + y$.

- A 60
- B 80
- C 120
- D 160

26 Simplify :

Permudahkan :

$$\frac{12y-4}{9y^2-1}$$

- A $\frac{8}{9y-1}$
- B $\frac{8}{9y^2-1}$
- C $\frac{4}{3y-1}$
- D $\frac{4}{3y+1}$

27 Diagram 14 shows a parallelogram $PQRU$ and a rectangle $RSTU$.

Rajah 14 menunjukkan sebuah segiempat selari $PQRU$ dan sebuah segiempat tepat $RSTU$.

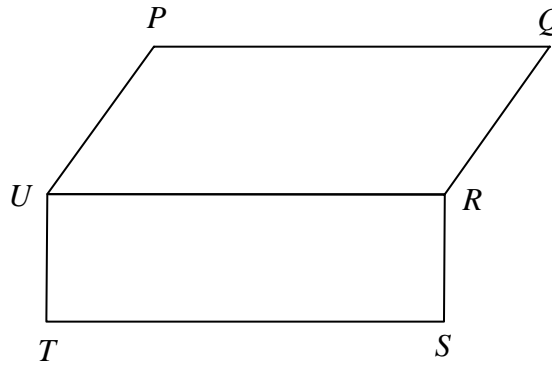


Diagram 14

Rajah 14

The perimeter of the whole diagram is 60 cm. The length of QR and RS are 10 cm and 8 cm respectively. Calculate the length, in cm, of ST .

Perimeter seluruh rajah ialah 60 cm. Panjang QR dan RS masing-masing ialah 10 cm dan 8 cm.

Hitung panjang, dalam cm, ST .

- A** 12
- B** 14
- C** 18
- D** 24

- 28 In Diagram 15, PQR is a straight line.
 Dalam Rajah 15, PQR ialah garis lurus.

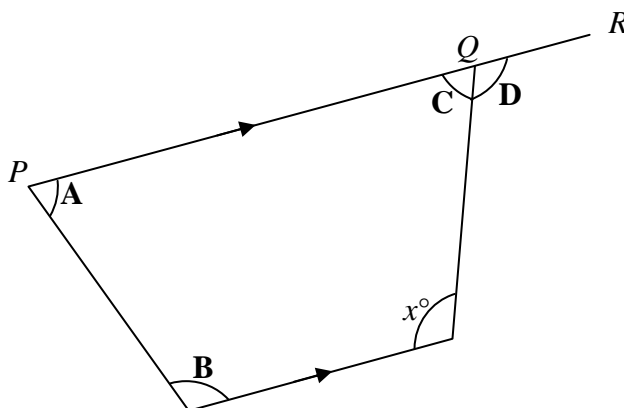


Diagram 15
Rajah 15

Which of the angle **A**, **B**, **C** or **D** is equal to x ?

Antara sudut **A**, **B**, **C** dan **D** yang manakah sama nilai dengan x ?

- 29 Given that $\frac{3x-10}{5} = 6-x$, find the value of x .

Diberi $\frac{3x-10}{5} = 6-x$, cari nilai x .

- A** -10
B -5
C 10
D 5
- 30 Solve the following linear inequality:
 Selesaikan ketaksamaan linear berikut:

$$3x - 6 \geq 12$$

- A** $x \geq 6$
B $x \leq 6$
C $x \leq 2$
D $x \geq 2$

- 32** The number of goats owned by Farez, Ong and Maniam are in the ratio of 3 : 2 : 7. The total number of goats is 360. Farez bought 20 goats from Ong and 10 goats from Maniam.

Find the new ratio of goats owned by Farez, Ong and Maniam.

Jumlah kambing yang dipunyai oleh Farez, Ong dan Maniam adalah mengikut nisbah 3 : 2 : 7. Jumlah keseluruhan kambing ialah 360 ekor. Farez membeli 20 ekor kambing daripada Ong dan 10 ekor kambing daripada Maniam.

Cari nisbah baru kambing yang dipunyai oleh Farez, Ong dan Maniam.

- A** 3 : 1 : 5
B 5 : 1 : 3
C 2 : 3 : 7
D 7 : 3 : 2
- 33** The ratio of the number of Malay, Chinese and Indian students in Sekolah Kebangsaan Sri Damai is 7 : 3 : 5.

If there are 210 Malay students, find the total number of students in that school.

Nisbah bilangan pelajar Melayu, Cina dan India di Sekolah Kebangsaan Sri Damai ialah 7 : 3 : 5.

Jika bilangan pelajar Melayu ialah 210, cari jumlah bilangan pelajar dalam sekolah itu.

- A** 90
B 150
C 360
D 450

- 34 Diagram 17 is a line graph showing the profit of Syarikat Wangmas from 2004 to 2007.

Rajah 17 ialah graf garis yang menunjukkan keuntungan Syarikat Wangmas dari tahun 2004 hingga 2007.

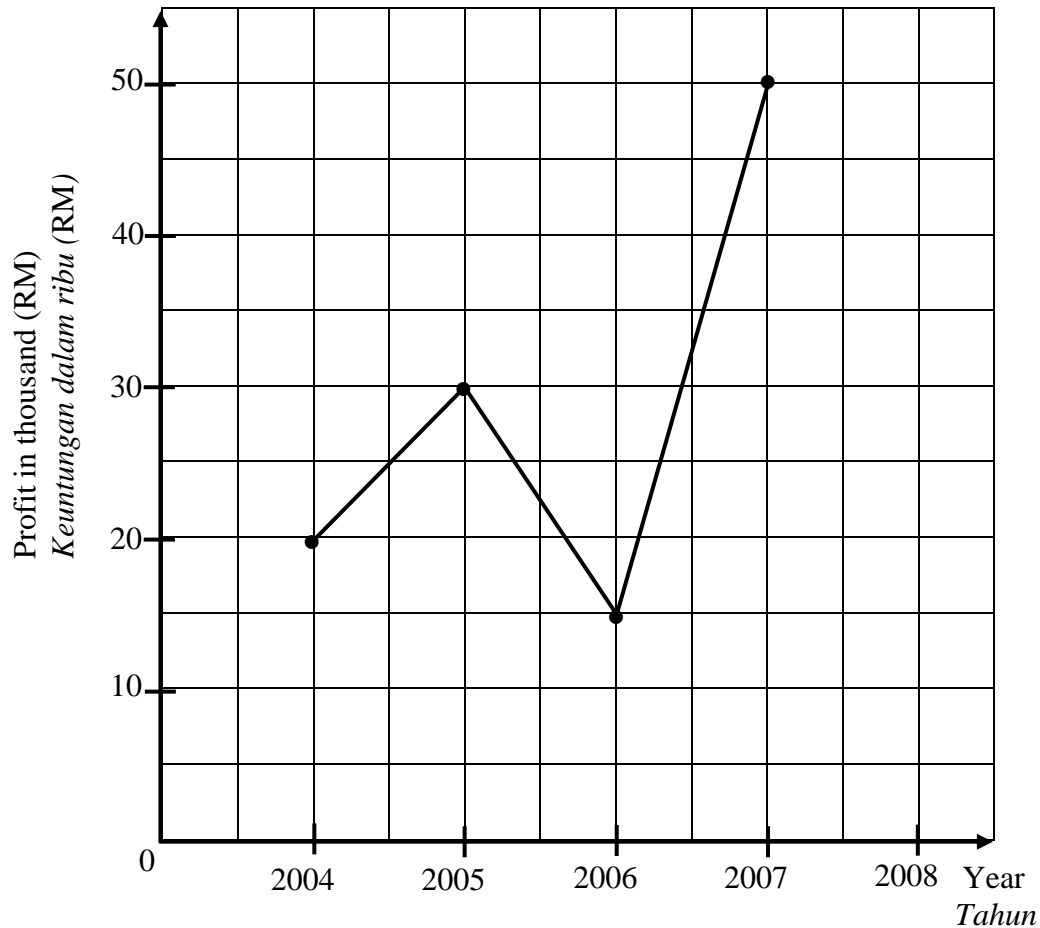


Diagram 17
Rajah 17

The total profit from 2004 to 2008 is RM160 000.
Calculate the profit for 2008.

*Jumlah keuntungan dari tahun 2004 hingga 2008 ialah RM160 000.
Hitung keuntungan pada tahun 2008.*

- A RM40 000
- B RM45 000
- C RM50 000
- D RM115 000

35 Table 1 shows the monthly incomes of 20 families in a survey.

Jadual 1 menunjukkan pendapatan bulanan bagi 20 buah keluarga dalam suatu kajian.

Monthly income (RM) <i>Pendapatan bulanan (RM)</i>	1000	5000	10 000	15 000
Frequency <i>Kekerapan</i>	5	4	5	6

Table 1

Jadual 1

Calculate the difference between the mean and the mode of the data.

Hitung perbezaan antara min dan mod bagi data tersebut.

- A** 6 750
- B** 7 250
- C** 8 250
- D** 15 000

- 36 Diagram 18 is a pie chart showing the favourite games of 540 students in SMK Wawasan.

Rajah 18 ialah carta pai yang menunjukkan permainan kegemaran bagi 540 orang pelajar di SMK Wawasan.

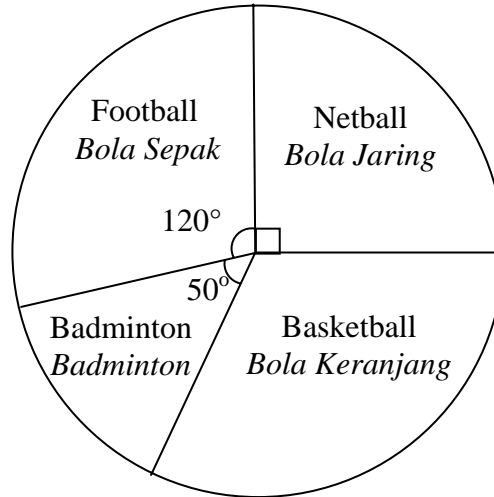


Diagram 18
Rajah 18

Calculate the number of students who choose basketball as their favourite game.

Hitung bilangan pelajar yang memilih bola keranjang sebagai permainan kegemaran mereka.

- A 100
- B 150
- C 190
- D 280

- 37 Diagram 19 shows two right angled triangles, QPR and PRS .

Rajah 19 menunjukkan dua buah segitiga bersudut tegak, QPR dan PRS .

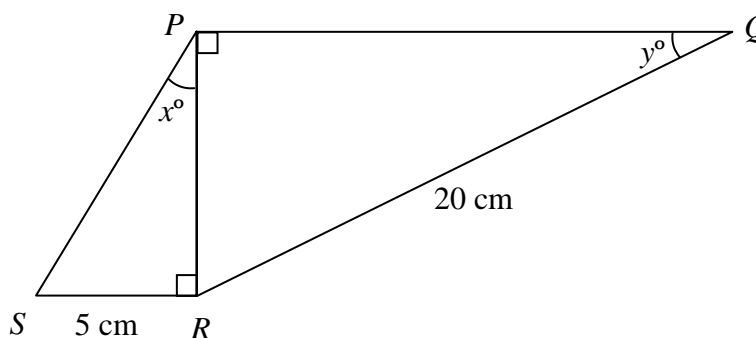


Diagram 19
Rajah 19

It is given that $\tan x^\circ = \frac{5}{12}$.

Find the value of $\cos y^\circ$.

Diberi bahawa $\tan x^\circ = \frac{5}{12}$.

Cari nilai bagi kos y° .

- A $\frac{3}{4}$
 B $\frac{5}{4}$
 C $\frac{3}{5}$
 D $\frac{4}{5}$

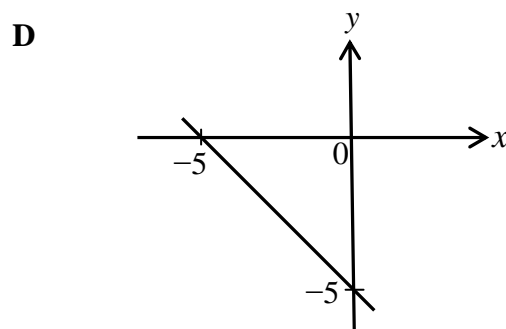
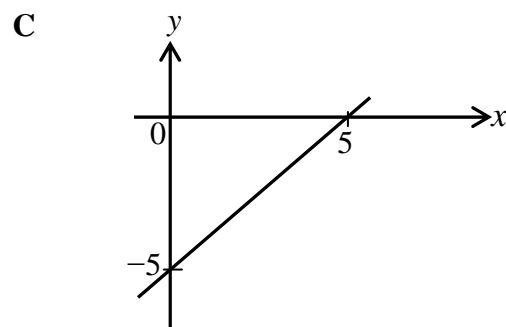
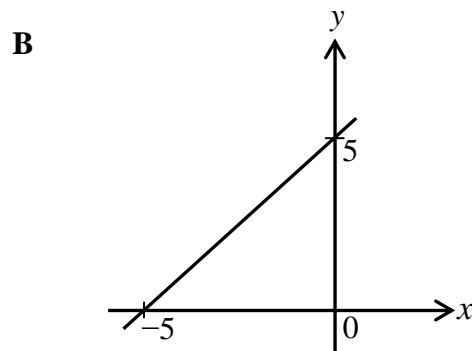
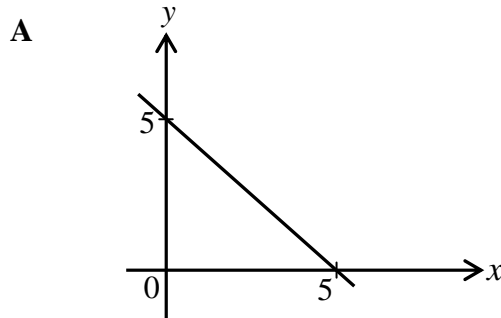
- 38 Given a function $y = x^2 + 3x - 7$, calculate the value of y when $x = -3$.

Diberi suatu fungsi $y = x^2 + 3x - 7$, hitungkan nilai y apabila $x = -3$.

- A -25
 B -11
 C -10
 D -7

39 Which of the following graphs represents $y = -x + 5$?

Antara graf berikut, yang manakah mewakili $y = -x + 5$?



40 Diagram 20 shows a square $PQRS$. $TUVW$ is a circle with centre O .

Rajah 20 menunjukkan sebuah segiempat sama, $PQRS$. $TUVW$ ialah sebuah bulatan berpusat O .

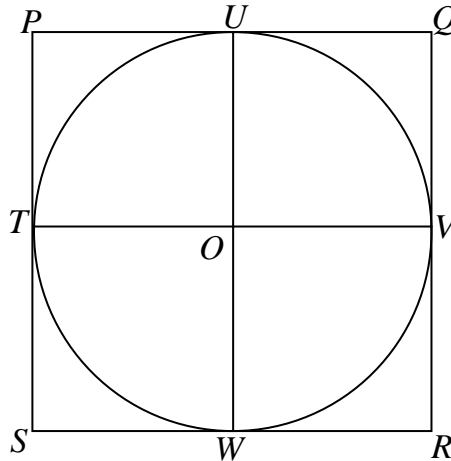


Diagram 20
Rajah 20

K is the locus of a point which moves such that $KO = OW$.

L is the locus of a point which moves such that it is always equidistant from the lines PS and QR .

Which of the following points are the intersection of locus K and locus L ?

K ialah lokus suatu titik yang bergerak dengan keadaan $KO = OW$.

L ialah lokus suatu titik yang bergerak dengan keadaan jaraknya sentiasa sama dari garisan PS dan garisan QR .

Antara titik-titik berikut, yang manakah persilangan lokus K dan lokus L ?

- A U and W
- B T and V
- C T and U
- D W and V

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 page 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

NO. KAD PENGENALAN

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

ANGKA GILIRAN

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



**JABATAN PELAJARAN
NEGERI SEMBILAN DARUL KHUSUS**



**PENILAIAN TINGKATAN 3 2009
MATHEMATICS**

50/2**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	3	
3	2	
4	2	
5	2	
6	3	
7	3	
8	3	
9	3	
10	2	
11	5	
12	3	
13	3	
14	4	
15	6	
16	3	
17	2	
18	2	
19	3	
20	4	
Jumlah	60	

Kertas soalan ini mengandungi 22 halaman bercetak

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 = $\frac{\text{distance travelled}}{\text{time taken}}$

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

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

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

SHAPE AND SPACE
BENTUK DAN RUANG

- 1 Area of rectangle = length \times width
Luas segiempat 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 = $\frac{1}{3} \pi j^2 t$

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

$$\frac{\text{Panjang lengkok}}{\text{Lilitan bulatan}} = \frac{\text{Sudut di pusat}}{360^\circ}$$
- 17
$$\frac{\text{Area of sector}}{\text{Area of circle}} = \frac{\text{Angle subtended at centre}}{360^\circ}$$

$$\frac{\text{Luas sektor}}{\text{Luas bulatan}} = \frac{\text{Sudut pusat}}{360^\circ}$$
- 18 Scale factor / *Faktor skala*, $k = \frac{PA'}{PA}$
- 19 Area of image = $k^2 \times \text{area of object}$
Luas imej = $k^2 \times \text{luas objek}$

Answer **all** questions
Jawab semua soalan

- 1 Calculate the value of $\left(\frac{3}{4} - \frac{5}{8}\right) \div \frac{3}{14}$ and express the answer as a fraction in its lowest term.

Hitung nilai bagi $\left(\frac{3}{4} - \frac{5}{8}\right) \div \frac{3}{14}$ dan ungkapkan jawapannya sebagai satu pecahan dalam sebutan terendah.

[2 marks]
[2 markah]

Answer / Jawapan:

1

	2
--	---

- 2 (a) Find the value of:

Cari nilai bagi:

$$\sqrt{0.09}$$

- (b) Calculate the value of:

Hitung nilai bagi:

$$(6 + \sqrt[3]{-27})^2$$

[3 marks]
[3 markah]

Answer / Jawapan:

(a)

(b)

2

	3
--	---

3 Diagram 1 in the answer space shows a polygon P drawn on a grid of equal squares.

On Diagram 1 in the answer space, draw the image of P under the translation

$$\begin{pmatrix} -4 \\ 1 \end{pmatrix}.$$

Rajah 1 di ruang jawapan menunjukkan poligon P yang dilukis pada grid segiempat sama yang sama besar.

Pada Rajah 1 di ruang jawapan, lukis imej P di bawah translasi $\begin{pmatrix} -4 \\ 1 \end{pmatrix}$.

Answer / Jawapan:

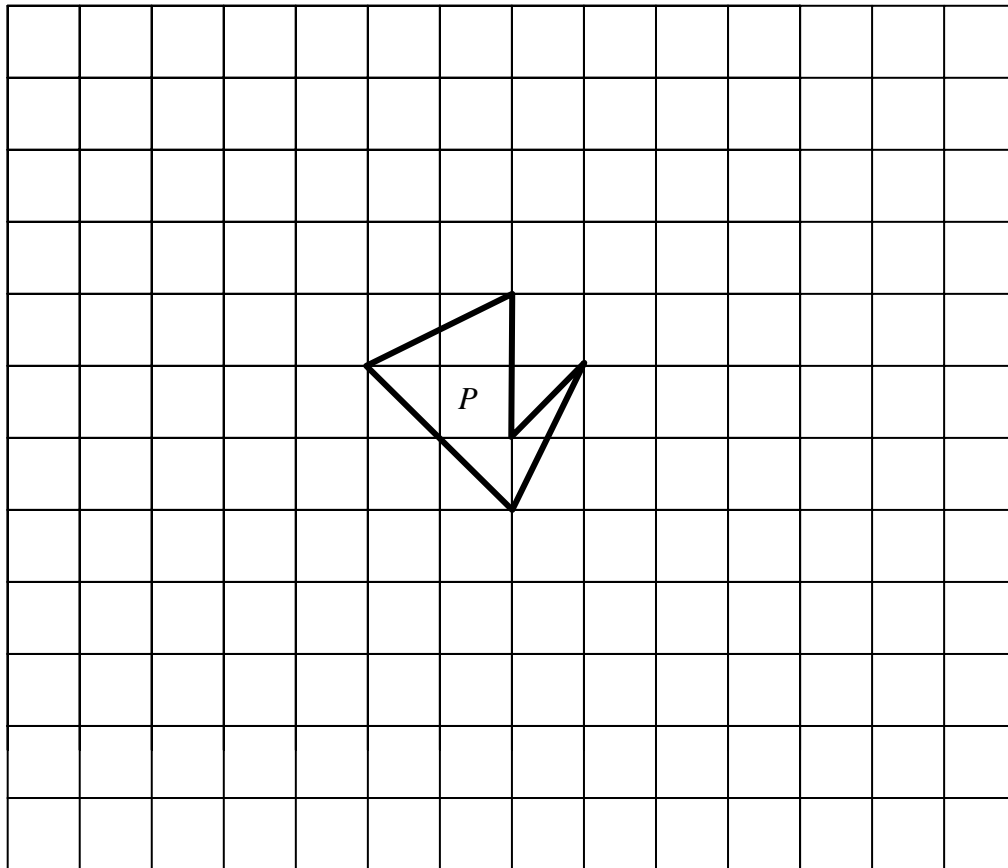
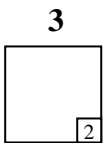


Diagram 1

Rajah 1

[2 marks]
[2 markah]



- 4 Diagram 2 in the answer space shows a polygon $PQRSTU$, drawn on a grid of equal squares.

$P'Q'R'S'T'U'$ is the image of $PQRSTU$, under an enlargement.

On Diagram 2 in the answer space, mark W as the centre of enlargement.

Rajah 2 di ruang jawapan menunjukkan sebuah poligon $PQRSTU$, yang dilukis pada grid segiempat sama.

$P'Q'R'S'T'U'$ ialah imej bagi $PQRSTU$ di bawah suatu pembesaran.

Pada Rajah 2 di ruang jawapan, tandakan W sebagai pusat pembesaran itu.

[2 marks]

[2 markah]

Answer / Jawapan:

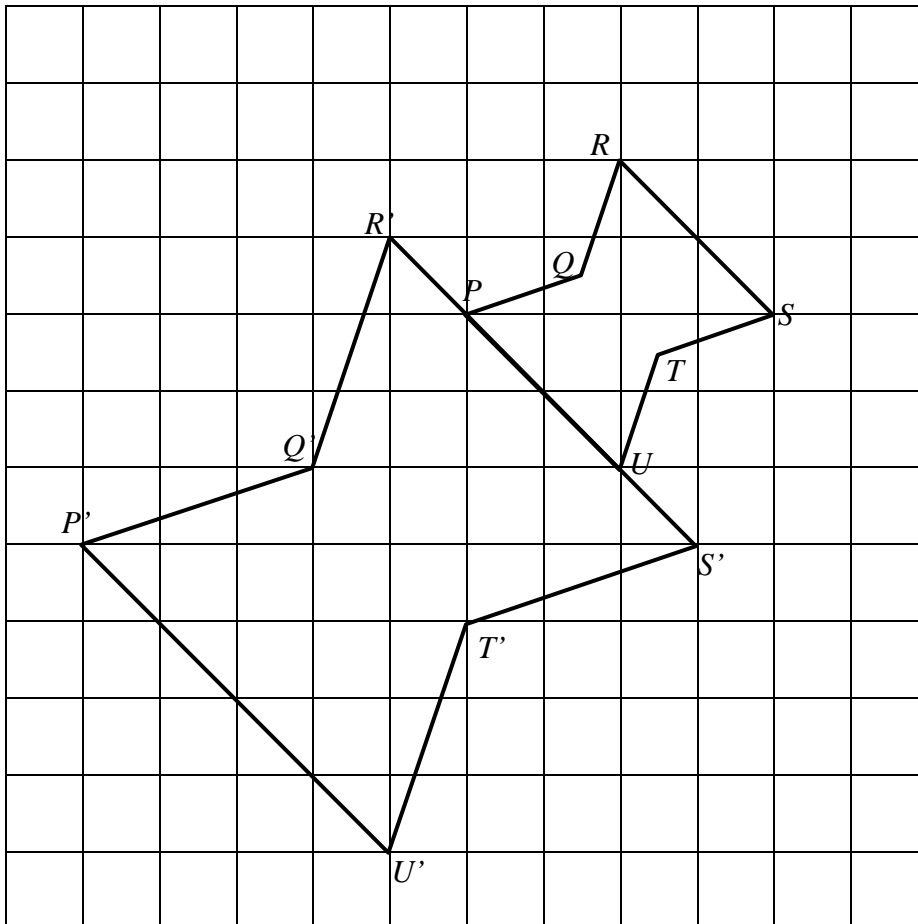
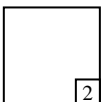


Diagram 2

Rajah 2

4



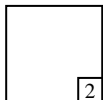
5 Given $\frac{7}{5a+b} = 2$, express a in terms of b .

Diberi $\frac{7}{5a+b} = 2$, ungkapkan a dalam sebutan b .

[2 marks]
[2 markah]

Answer / Jawapan:

5



6 Solve each of the following equations:

Selesaikan tiap-tiap persamaan berikut:

(a) $\frac{18}{p} = 3$

(b) $6y - 15 = 3(y + 8)$

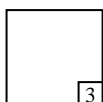
[3 marks]
[3 markah]

Answer / Jawapan:

(a)

(b)

6



7 Expand each of the following expressions:

Kembangkan tiap-tiap ungkapan berikut:

(a) $5p(4 - q)$

(b) $(5m + 2)(m - 3)$

[3 marks]

[3 markah]

Answer / Jawapan:

(a)

(b)

7

--

8 Factorise completely each of the following expressions:

Faktorkan selengkapnya tiap-tiap ungkapan berikut:

(a) $4y - 20xy$

(b) $6x^2 - 24$

[3 marks]

[3 markah]

Answer / Jawapan:

(a)

(b)

8

--

- 9 Diagram 3 shows polygon R drawn on a grid of equal squares with sides of 1 unit.

Rajah 3 menunjukkan sebuah poligon R dilukis pada grid segiempat sama bersisi 1 unit.

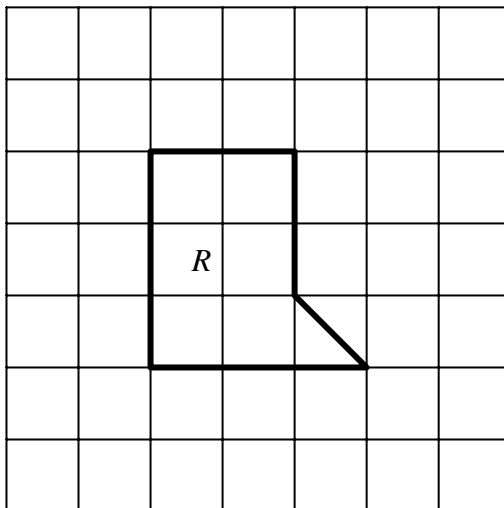


Diagram 3
Rajah 3

On the grid in the answer space, redraw polygon R using the scale $1 : \frac{1}{3}$.

The grid has equal squares with sides of 1 unit.

Pada grid di ruang jawapan, lukis semula poligon R menggunakan skala

$$1 : \frac{1}{3}.$$

Grid itu terdiri daripada segiempat sama bersisi 1 unit.

[3 marks]

[3 markah]

- 11 Diagram 4 shows a kite $KLMN$.

Rajah 4 menunjukkan sebuah layang KLMN.

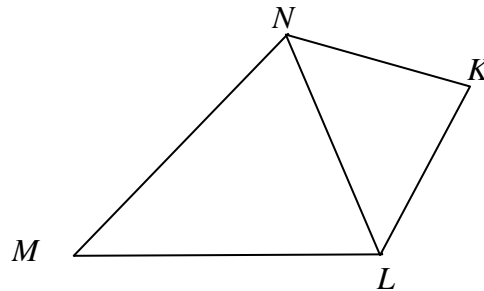


Diagram 4

Rajah 4

X is a moving point in the kite such that it is always equidistant from the straight lines KL and KN .

X adalah titik yang bergerak dalam layang itu dengan keadaan jarak tegaknya dari garis lurus KL dan KN adalah sama.

- (a) By using the letters in the diagram, state the locus of X .

Dengan menggunakan huruf abjad pada rajah itu, nyatakan lokus bagi X .

- (b) Diagram 5 in the answer space shows a regular pentagon $ABCDE$. Y and Z are two moving points in the pentagon

Rajah 5 di ruang jawapan menunjukkan sebuah pentagon sekata $ABCDE$. Y dan Z adalah dua titik yang bergerak dalam pentagon itu.

On Diagram 5, draw

Pada rajah 5, lukis

- (i) the locus of Y such that $YA = AB$.

lokus bagi Y dengan keadaan $YA=AB$.

- (ii) the locus of Z such that it is equidistant from point C and E .

lokus bagi Z dengan keadaan Z sentiasa berjarak sama dari titik C dan E .

- (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.

[5 marks]

[5 markah]

Answer / Jawapan:

(a)

(b) (i), (ii)

(c)

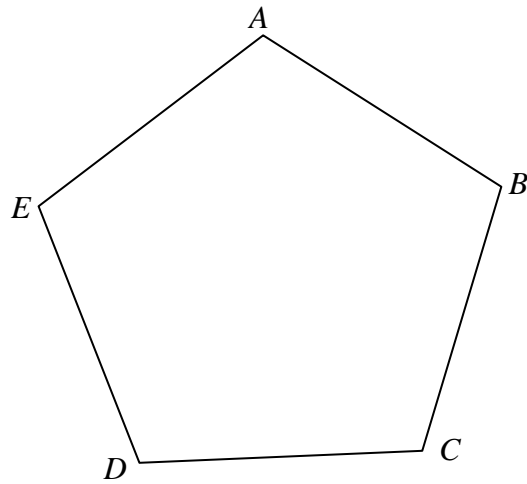
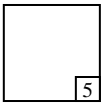


Diagram 5
Rajah 5

11



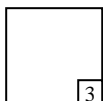
- 12 Express $\frac{1}{4v} - \frac{v+4}{12v^2}$ as a single fraction in its simplest form.

Ungkapkan $\frac{1}{4v} - \frac{v+4}{12v^2}$ sebagai satu pecahan tunggal dalam bentuk termudah.

[3 marks]
[3 markah]

Answer / Jawapan:

12



- 13 List all the integer values of x which satisfy both the inequalities

$$\frac{x}{3} - 2 \leq 1 \quad \text{and} \quad 9 - x < 3.$$

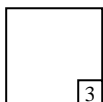
Senaraikan semua nilai integer x yang memuaskan kedua-dua ketaksamaan

$$\frac{x}{3} - 2 \leq 1 \quad \text{dan} \quad 9 - x < 3.$$

[3 marks]
[3 markah]

Answer / Jawapan:

13



14 Table 2 shows the number of cars sold by a company for four months.
Jadual 2 menunjukkan bilangan kereta yang dijual oleh sebuah syarikat dalam tempoh empat bulan.

Month <i>Bulan</i>	Numbers of cars <i>Bilangan kereta</i>
July <i>Julai</i>	75
August <i>Ogos</i>	120
September <i>September</i>	150
October <i>Oktober</i>	180

Table 2
Jadual 2

The information of cars sold by the company for September is shown fully in the pictograph in the answer space.

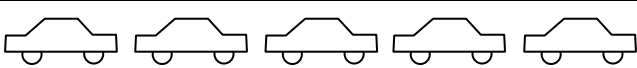
Complete the pictograph to represent all the information in Table 2.

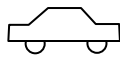
Maklumat bagi jualan kereta syarikat tersebut bagi bulan September ditunjukkan sepenuhnya dalam piktograf di ruang jawapan.

Lengkapkan piktograf itu untuk mewakili semua maklumat dalam Jadual 2.

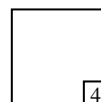
[4 marks]
[4 markah]

Answer / *Jawapan:*

July <i>Julai</i>	
August <i>Ogos</i>	
September <i>September</i>	
October <i>Oktober</i>	

 Represents cars
Mewakili buah kereta

14



15 In the answer space, X is a point on the straight line MN .
Dalam ruangan jawapan, X ialah satu titik di atas garisan lurus MN .

- (a) (i) Using only a ruler and a pair of compasses, construct a perpendicular line, XY , to the line MN such that $XY = 5$ cm.

Menggunakan pembaris dan jangka lukis sahaja, bina garisan serenjang, XY , pada garis MN dengan keadaan $XY = 5$ cm.

- (ii) Draw the triangle MYN .

Lukis segitiga MYN .

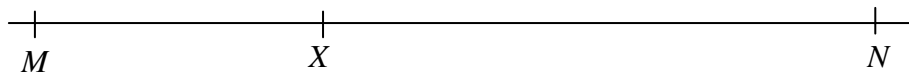
(b) Based on the diagram constructed in 15(a), measure
Berdasarkan rajah yang dibina di 15(a), ukur

- (i) the length, in cm, of MY ,
panjang, dalam cm, bagi MY ,
- (ii) $\angle YNM$ using a protractor.
 $\angle YNM$ menggunakan protractor.

[6 marks]
[6 markah]

Answer / *Jawapan:*

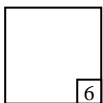
- (a) (i), (ii)



- (b) (i)

- (ii)

15



16 Find the value of

Cari nilai bagi

(a) $3^4 \times 3^{-2}$

(b) $27^{-\frac{1}{3}} \div 64^{\frac{2}{3}}$

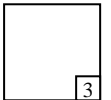
[3 marks]
[3 markah]

Answer/Jawapan

(a)

(b)

16



17 The number of students taking part in the Seremban Half Marathon from schools *P*, *Q* and *R* are in the ratio of 9 : 5 : 6. There are 48 more students from school *P* than school *Q*.

Calculate the total number of participants from the three schools.

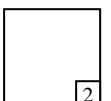
Bilangan pelajar yang mengambil bahagian dalam 'Seremban Half Marathon' dari sekolah P, Q dan R mengikut nisbah 9 : 5 : 6. Bilangan pelajar sekolah P melebihi sekolah Q seramai 48 orang.

Hitung jumlah peserta daripada ketiga-tiga buah sekolah.

[2 marks]
[2 markah]

Answer /Jawapan:

17



- 18 In Diagram 6, O is the centre of the semicircle.
Dalam Rajah 6, O ialah pusat sebuah semibulatan.

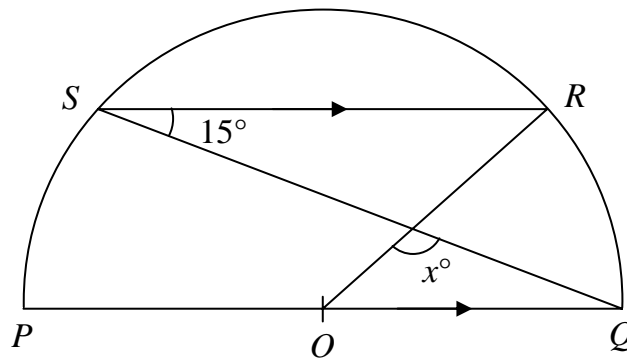


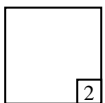
Diagram 6
Rajah 6

Find the value of x .

Cari nilai x .

[2 marks]
[2 markah]

Answer / *Jawapan:*



- 19 In the Diagram 7, KMN is a straight line.
Dalam Rajah 7, KMN ialah garis lurus.

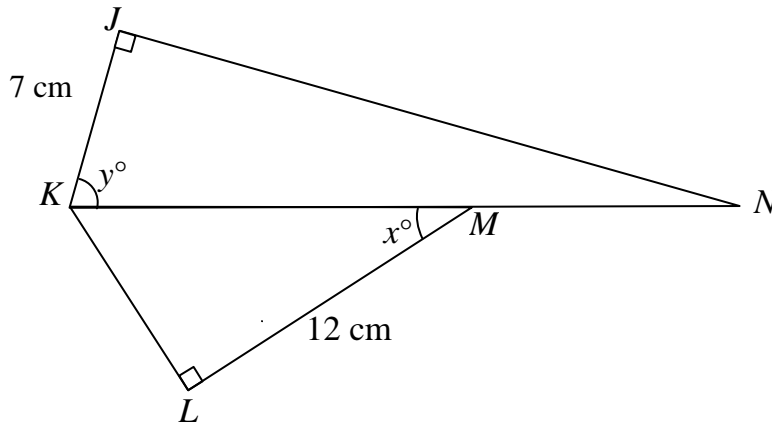


Diagram 7

Rajah 7

It is given that $\tan x^\circ = \frac{3}{4}$ and $\cos y^\circ = \frac{7}{25}$, calculate the length of MN .

Diberi $\tan x^\circ = \frac{3}{4}$ dan $\cos y^\circ = \frac{7}{25}$, hitungkan panjang MN .

[3 marks]

[3 markah]

Answer / Jawapan:

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

Table 3 shows the values of two variables, x and y , of a function.
Jadual 3 menunjukkan nilai-nilai dua pembolehubah x dan y , bagi suatu fungsi.

x	-3	-2	-1	0	1	2	3
y	13	3	-3	-5	-3	3	13

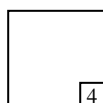
Table 3
Jadual 3

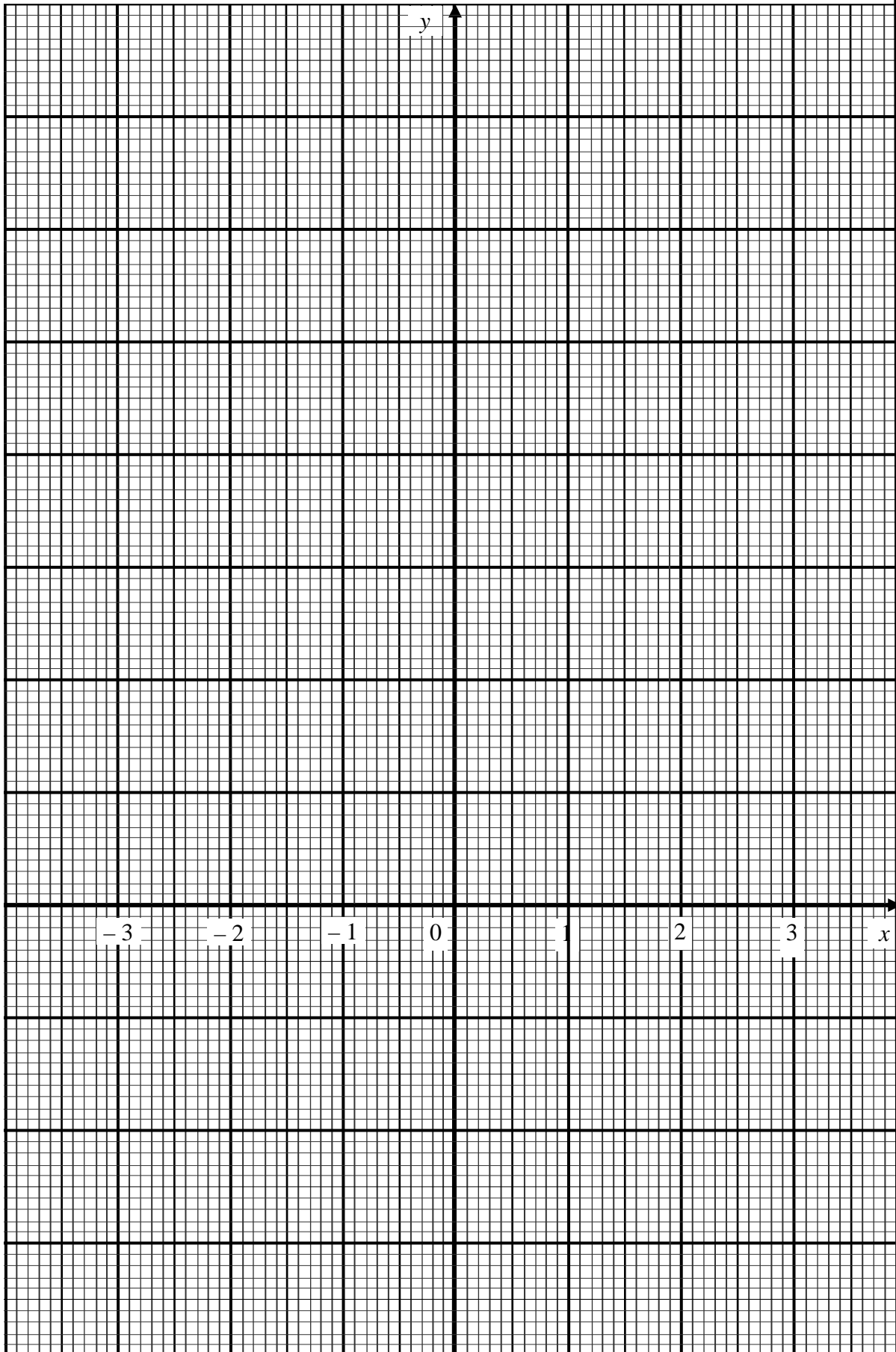
The x -axis and the y -axis are provided on the graph paper on page 21.
Paksi- x dan paksi- y telah disediakan pada kertas graf di halaman 21.

- (a) By using a scale of 2 cm to 2 units, complete and label the y -axis.
Dengan menggunakan skala 2 cm kepada 2 unit, lengkap dan labelkan paksi- y itu.
- (b) Based on Table 3, plot the points on the graph paper.
Berdasarkan Jadual 3, plot titik-titik pada kertas graf itu.
- (c) Hence, draw the graph of the function.
Seterusnya, lukis graf fungsi itu.

[4 marks]
[4 markah]

Answer / *Jawapan:*





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 diperuntukan 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
PENILAIAN TINGKATAN TIGA
NEGERI SEMBILAN 2009**



**MATHEMATICS
PAPER 1 AND PAPER 2**

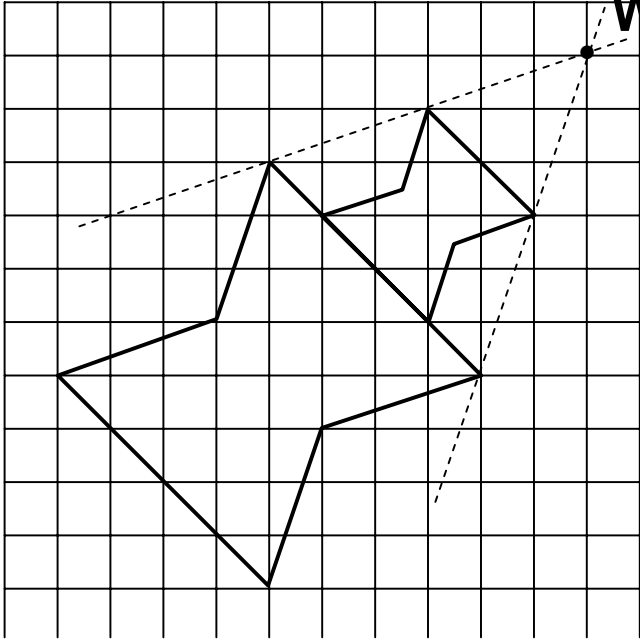
ANSWER SCHEME

**PENILAIAN MATEMATIK TINGKATAN TIGA 2009
PAPER 1**


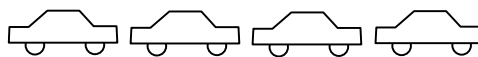
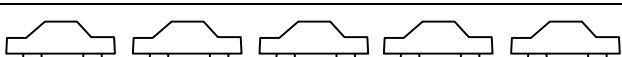
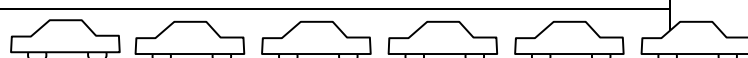

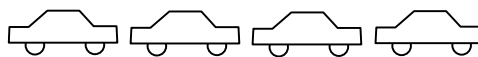
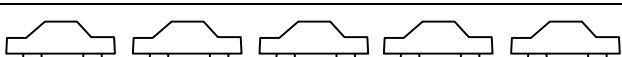
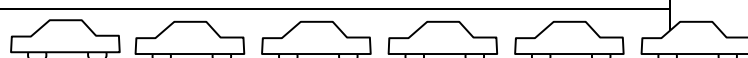

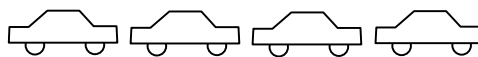
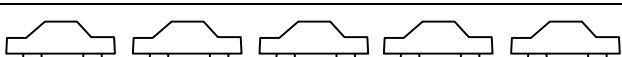
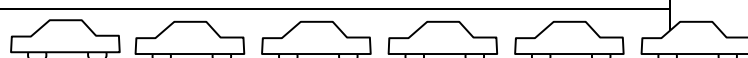
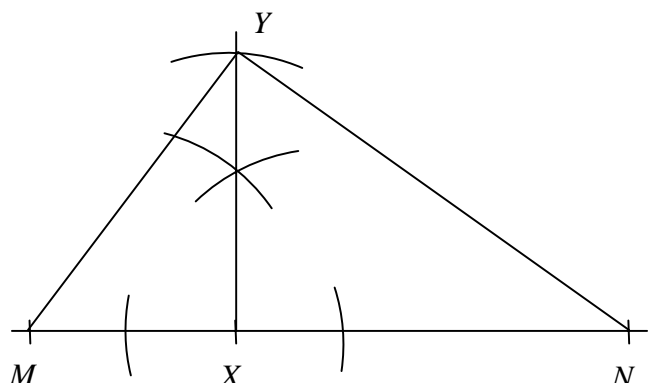
QUESTION	ANSWER	QUESTION	ANSWER
1	C	21	B
2	A	22	C
3	C	23	C
4	B	24	B
5	D	25	C
6	B	26	D
7	B	27	A
8	C	28	D
9	A	29	D
10	C	30	A
11	A	31	B
12	D	32	A
13	C	33	D
14	C	34	B
15	B	35	A
16	C	36	B
17	C	37	D
18	B	38	D
19	D	39	A
20	B	40	A

**2009 Marking Scheme Penilaian Tingkatan Tiga
Jabatan Pelajaran Negeri Sembilan**

Q	MARKING SCHEME		Full marks
1.	$\frac{1}{8} \times \frac{14}{3}$ $\frac{7}{12}$ <p>Note : accept $\frac{1}{8}$ for K1</p>	K1 N1	2
2.	<p>(a) 0.3</p> <p>(b) 6 – 3 or 3</p> <p>9</p>	N1 K1 N1	
3.	<p>Image correctly drawn Note : 4 or 5 points plotted correctly P1</p>	P2	2

Q	MARKING SCHEME		Full marks
4.	 <p data-bbox="408 1070 906 1178">Centre of enlargement plotted correctly ($\pm \frac{1}{4}$ of the square grid)</p>	P2	2
5.	$10a + 2b = 7$ $a = \frac{7 - 2b}{10}$	P1 N1	2
6.	<p data-bbox="384 1473 400 1503">6</p> $6y - 3y = 24 + 15$ <p data-bbox="384 1619 416 1648">13</p>	N1 K1 N1	3
7.	<p data-bbox="411 1727 911 1765">(a) $20p - 5pq$ or $-5pq + 20p$</p> <p data-bbox="411 1798 807 1836">(b) $5m^2 - 15m$ or $2m - 6$</p> <p data-bbox="504 1877 703 1915">$5m^2 - 13m - 6$</p>	N1 K1 N1	3

Q	MARKING SCHEME		Full marks
8.	<p>(a) $4y(1 - 5x)$</p> <p>(b) $6(x^2 - 4)$</p> <p>$6(x - 2)(x + 2)$</p>	<p>P1</p> <p>P1</p> <p>N1</p>	<p>3</p>
9.	<div data-bbox="309 689 1115 1413" data-label="Diagram"> </div> <p data-bbox="379 1464 967 1570"> Any 1 side correctly drawn Any 2 corresponding sides are correctly drawn Complete diagram </p>	<p>K1</p> <p>K1</p> <p>N1</p>	<p>3</p>
10.	<p>18.5</p>	<p>N2</p>	<p>2</p>

Q	MARKING SCHEME		Full marks										
14.	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%; padding: 5px;">July Julai</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">August Ogos</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">September September</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">October Oktober</td> <td style="padding: 5px;"></td> </tr> <tr> <td colspan="2" style="padding: 5px; text-align: center;">30</td> </tr> </table>	July Julai		August Ogos		September September		October Oktober		30		<p>N1 N1 N1 N1 N1 P1</p>	4
July Julai													
August Ogos													
September September													
October Oktober													
30													
15.	<div style="text-align: center;">  </div> <p>(a) (i) Construct a perpendicular line XY to the line MN Line XY is drawn Construct $XY = 5$ cm</p> <p>(ii) Triangle MYN drawn correctly</p> <p>(b) (i) $MY = 6.3 \pm 0.1$ cm</p> <p>(ii) $\angle YNM = 34^\circ \pm 1^\circ$</p>	<p>K1 K1 K1 N1 N1 N1</p>	6										
16.	<p>(a) 9</p> <p>(b) 3^{-1} or $\frac{1}{3}$ or 4^2 or 16</p> <p style="text-align: center;">$\frac{1}{48}$</p>	<p>N1 K1 N1</p>	3										

Q	MARKING SCHEME		Full marks
17.	20×12 or $108 + 60 + 72$ 240	K1 N1	2
18.	135° Note : Seen 30° at <i>ROQ</i> on the diagram, award P1	N2	2
19.	3×5 or 15 $25 - 15$ 10 Seen 9 at <i>KL</i> , award P1	K1 K1 N1	3
20.	a) Uniform scale on the y-axis b) All 7 points correctly plotted Smooth curve passes through all the 7 points Note : 1. Allow K2 if points are not plotted but curve passes through all the 7 points 2. 5 or 6 points plotted correctly or curve passes through 5 or 6 points, award K1 3. If scale is not written but all the points plotted correctly, award K1K2. 3. For other scale on the y-axis, deduct 1 mark from total marks obtained.	K1 K2 N1	4