

**RUMUS MATEMATIK**  
**MATHEMATICAL FORMULAE**

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

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

**NOMBOR DAN OPERASI**  
**NUMBER AND OPERATIONS**

- |   |  |
|---|--|
| <p>1 <math>a^m \times a^n = a^{m+n}</math></p> <p>3 <math>(a^m)^n = a^{mn}</math></p> <p>5 <math>a^{\frac{m}{n}} = (a^m)^{\frac{1}{n}} = \left(a^{\frac{1}{n}}\right)^m</math></p> <p>7 Faedah mudah / <i>Simple interest</i>, <math>I = Prt</math></p> <p>8 Nilai matang / <i>Maturity value</i>, <math>MV = P \left(1 + \frac{r}{n}\right)^{nt}</math></p> <p>9 Jumlah bayaran balik / <i>Total repayment</i>, <math>A = P + Prt</math></p> <p>10 <math>\text{Premium} = \frac{\text{Nilai muka polisi}}{\text{RMx}} \times (\text{Kadar premium per RMx})</math><br/> <math>\text{Premium} = \frac{\text{Face value of policy}}{\text{RMx}} \times (\text{Premium rate per RMx})</math></p> <p>11 Jumlah insurans yang harus dibeli = <math>\left(\begin{array}{c} \text{Peratusan} \\ \text{ko - insurans} \end{array}\right) \times \left(\begin{array}{c} \text{Nilai boleh} \\ \text{insurans harta} \end{array}\right)</math><br/> <i>Amount of required insurance</i> = <math>\left(\begin{array}{c} \text{Percentage of} \\ \text{co - insurance} \end{array}\right) \times \left(\begin{array}{c} \text{Insurable value} \\ \text{of property} \end{array}\right)</math></p> | <p>2 <math>a^m \div a^n = a^{m-n}</math></p> <p>4 <math>a^{\frac{1}{n}} = \sqrt[n]{a}</math></p> <p>6 <math>a^{\frac{m}{n}} = \sqrt[n]{a^m} = (\sqrt[n]{a})^m</math></p> |
|---|--|

**PERKAITAN DAN ALGEBRA**  
**RELATIONSHIP AND ALGEBRA**

- |  |   |
|--|---|
| <p>1 Jarak / <i>Distance</i> = <math>\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}</math></p> <p>2 Titik tengah / <i>Midpoint</i>, <math>(x, y) = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)</math></p> <p>3 Laju purata = <math>\frac{\text{Jumlah jarak}}{\text{Jumlah masa}}</math><br/><br/> <i>Average speed</i> = <math>\frac{\text{Total distance}}{\text{Total time}}</math></p> <p>5 <math>A^{-1} = \frac{1}{ad - bc} \begin{pmatrix} d &amp; -b \\ -c &amp; a \end{pmatrix}</math></p> | <p>4 <math>m = \frac{y_2 - y_1}{x_2 - x_1}</math></p> <p>6 <math>m = -\frac{\text{pintasan-y}}{\text{pintasan-x}}</math><br/> <math>m = -\frac{y - \text{intercept}}{x - \text{intercept}}</math></p> |
|--|---|

**SUKATAN DAN GEOMETRI**  
**MEASUREMENT AND GEOMETRY**

- 1 Teorem Pythagoras / *Pythagoras Theorem*,  $c^2 = a^2 + b^2$
- 2 Hasil tambah sudut pedalaman poligon / *Sum of interior angles of a polygon*,  
 $= (n - 2) \times 180^\circ$
- 3 Lilitan bulatan =  $\pi d = 2 \pi r$   
*Circumference of circle =  $\pi d = 2 \pi r$*
- 4 Luas bulatan =  $\pi r^2$   
*Area of circle =  $\pi r^2$*
- 5 
$$\frac{\text{Panjang lengkok}}{2\pi r} = \frac{\theta}{360^\circ}$$
  
$$\frac{\text{Arc length}}{2\pi r} = \frac{\theta}{360^\circ}$$
- 6 
$$\frac{\text{Luas sektor}}{\pi r^2} = \frac{\theta}{360^\circ}$$
  
$$\frac{\text{Area of sector}}{\pi r^2} = \frac{\theta}{360^\circ}$$
- 7 Luas layang =  $\frac{1}{2}$  x hasil darab panjang dua pepenjuru  
*Area of kite =  $\frac{1}{2}$  x product of two diagonals*
- 8 Luas trapezium =  $\frac{1}{2}$  x hasil tambah dua sisi selari x tinggi  
*Area of trapezium =  $\frac{1}{2}$  x sum of two parallel sides x height*
- 9 Luas permukaan silinder =  $2\pi r^2 + 2\pi rh$   
*Surface area of cylinder =  $2\pi r^2 + 2\pi rh$*
- 10 Luas permukaan kon =  $\pi r^2 + \pi rs$   
*Surface area of cone =  $\pi r^2 + \pi rs$*
- 11 Luas permukaan sfera =  $4\pi r^2$   
*Surface area of sphere =  $4\pi r^2$*
- 12 Isi padu prisma = luas keratan rentas x tinggi  
*Volume of prism = area of cross section x height*
- 13 Isi padu silinder =  $\pi r^2 h$   
*Volume cylinder =  $\pi r^2 h$*

- 14 Isi padu kon =  $\frac{1}{3} \pi j^2 t$   
*Volume of cone* =  $\frac{1}{3} \pi r^2 h$
- 15 Isi padu sfera =  $\frac{4}{3} \pi j^3$   
*Volume of sphere* =  $\frac{4}{3} \pi r^3$
- 16 Isi padu piramid =  $\frac{1}{3} \times$  luas tapak  $\times$  tinggi  
*Volume of pyramid* =  $\frac{1}{3} \times$  base area  $\times$  height
- 17 Faktor skala,  $k = \frac{PA'}{PA}$   
*Scale factor, k* =  $\frac{PA'}{PA}$
- 18 Luas imej =  $k^2 \times$  luas objek  
*Area of image* =  $k^2 \times$  area of object

**STATISTIK DAN KEBARANGKALIAN**  
**STATISTICS AND PROBABILITY**

- 1 Min / Mean,  $\bar{x} = \frac{\Sigma x}{N}$
- 2 Min / Mean,  $\bar{x} = \frac{\Sigma fx}{\Sigma f}$
- 3 Varians / Variance,  $\sigma^2 = \frac{\Sigma(x-\bar{x})^2}{N} = \frac{\Sigma x^2}{N} - \bar{x}^2$
- 4 Varians / Variance,  $\sigma^2 = \frac{\Sigma f(x-\bar{x})^2}{\Sigma f} = \frac{\Sigma fx^2}{\Sigma f} - \bar{x}^2$
- 5 Sisihan piawai / Standard deviation,  $\sigma = \sqrt{\frac{\Sigma(x-\bar{x})^2}{N}} = \sqrt{\frac{\Sigma x^2}{N} - \bar{x}^2}$
- 6 Sisihan piawai / Standard deviation,  $\sigma = \sqrt{\frac{\Sigma f(x-\bar{x})^2}{\Sigma f}} = \sqrt{\frac{\Sigma fx^2}{\Sigma f} - \bar{x}^2}$
- 7  $P(A) = \frac{n(A)}{n(S)}$
- 8  $P(A') = 1 - P(A)$

Jawab **semua** soalan.

Answer **all** questions.

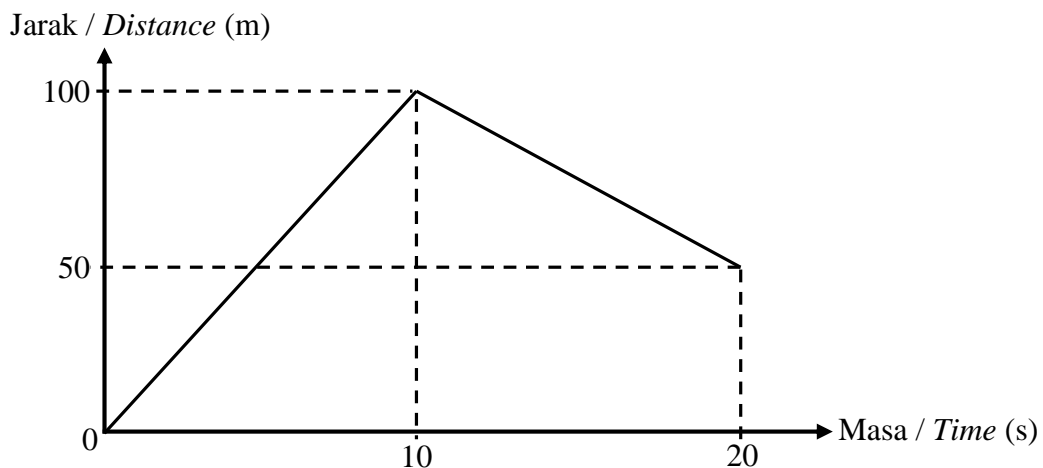
- 1 Ungkapkan  $1153.6 \times 10^3$  dalam bentuk piawai.  
*Express  $1153.6 \times 10^3$  in standard form.*
- |   |                      |   |                         |
|---|----------------------|---|-------------------------|
| A | $1.1536 \times 10^6$ | C | $1.1536 \times 10^{-3}$ |
| B | $1.1536 \times 10^3$ | D | $1.1536 \times 10^{-6}$ |
- 2 Antara berikut yang manakah **bukan** merupakan syarat untuk memohon kad kredit?  
*Which of the following is **not** the requirement to apply credit card?*
- A 21 tahun ke atas.  
*21 years old and above.*
- B Hafal nombor pin.  
*Remember the pin number.*
- C Berpendapatan minimum RM24 000 setahun.  
*Minimum income of RM24 000 per annum.*
- D Perlu mempunyai penyata gaji atau dokumen sokongan.  
*Requires salary slip or supporting documents.*
- 3 Vinesha menyimpan RM4 800 di sebuah bank dengan kadar faedah 3.5% setahun.  
Hitung jumlah simpanan Vinesha selepas 3 bulan.  
*Vinesha deposited RM4 800 in a bank with an interest rate of 3.5% per annum.  
Calculate the total savings of Vinesha after 3 months.*
- |   |       |   |         |
|---|-------|---|---------|
| A | RM42  | C | RM4 842 |
| B | RM168 | D | RM4 968 |
- 4 Antara berikut yang manakah **bukan** merupakan tujuan percukaian?  
*Which of the following is **not** the purpose of taxation?*
- A Sumber pendapatan kerajaan.  
*Source of government revenue.*
- B Alat kewangan untuk menstabilkan ekonomi.  
*Financial tool to stabilise the economy.*
- C Kawalan penjualan barangan atau perkhidmatan.  
*Control of sales of goods or services.*
- D Untuk meningkatkan industri pelancongan.  
*To increase tourism industry.*

- 5 Antara berikut yang manakah merupakan contoh yang betul bagi perbelanjaan tetap dan perbelanjaan tidak tetap?

*Which of the following is the correct example of fixed expenses and variable expenses?*

	<b>Perbelanjaan tetap</b> <i>Fixed expenses</i>	<b>Perbelanjaan tidak tetap</b> <i>Variable expenses</i>
<b>A</b>	Utiliti rumah <i>Home utilities</i>	Belanja petrol <i>Petrol expenses</i>
<b>B</b>	Keperluan anak-anak <i>Children's needs</i>	Ansuran kereta <i>Car installments</i>
<b>C</b>	Pemberian kepada ibu bapa <i>Allowance for parents</i>	Premium insurans <i>Insurance premium</i>
<b>D</b>	Pinjaman perumahan <i>Housing loan</i>	Perbelanjaan dapur <i>Groceries</i>

- 6 Rajah 1 menunjukkan graf jarak-masa bagi sebuah kereta dalam tempoh 20 saat.  
*Diagram 1 shows the distance-time graph of a car in a period of 20 seconds.*



Rajah/Diagram 1

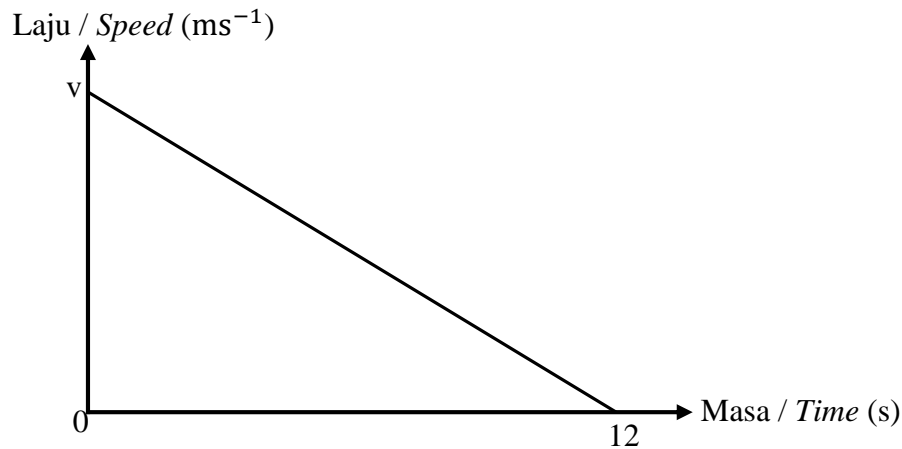
Hitung laju purata, dalam  $\text{ms}^{-1}$ , kereta itu dalam tempoh 20 saat.

*Calculate the average speed, in  $\text{ms}^{-1}$ , of the car in the period of 20 seconds.*

- |          |     |          |      |
|----------|-----|----------|------|
| <b>A</b> | 7.5 | <b>C</b> | 10.0 |
| <b>B</b> | 8.0 | <b>D</b> | 20.5 |

- 7 Rajah 2 menunjukkan graf laju-masa bagi sebuah kereta mainan dalam tempoh masa 12 saat.

*Diagram 2 shows a speed-time graph of a toy car for a period of 12 seconds.*

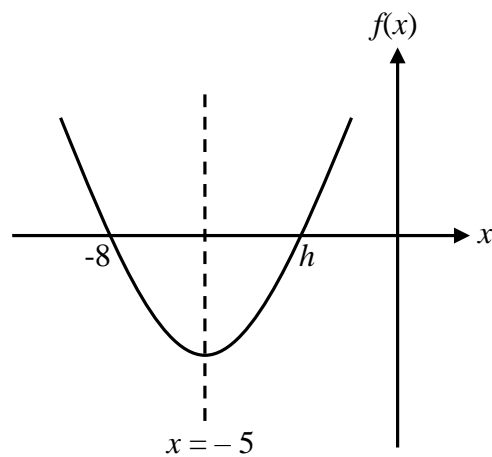


Rajah/Diagram 2

Jika nyahpecutan kereta mainan itu ialah  $0.5 \text{ ms}^{-2}$ , hitung nilai laju  $v$ , dalam  $\text{ms}^{-1}$ .

*If the deceleration of the toy car is  $0.5 \text{ ms}^{-2}$ , calculate the value of the speed  $v$ , in  $\text{ms}^{-1}$ .*

- |          |   |          |   |
|----------|---|----------|---|
| <b>A</b> | 3 | <b>C</b> | 5 |
| <b>B</b> | 4 | <b>D</b> | 6 |
- 8 Rajah 3 menunjukkan graf suatu fungsi kuadratik.  
*The diagram 3 shows a graph of quadratic function.*



Rajah/Diagram 3

Cari nilai  $h$ .

*Find the value of  $h$ .*

- |          |    |          |    |
|----------|----|----------|----|
| <b>A</b> | -1 | <b>C</b> | -2 |
| <b>B</b> | -3 | <b>D</b> | -4 |

- 9 Diberi bahawa  $y$  berubah secara langsung dengan  $x^2$  dan  $y = 80$  apabila  $x = 4$ , ungkapkan  $y$  dalam sebutan  $x$ .

*Given that  $y$  varies directly as  $x^2$  and  $y = 80$  when  $x = 4$ , express  $y$  in terms of  $x$ .*

A  $y = x^2$

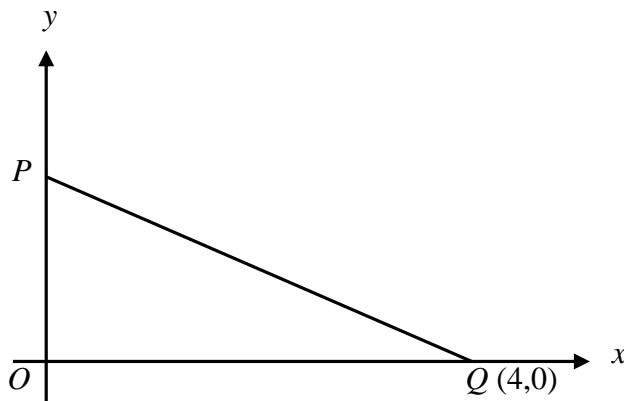
C  $y = \frac{1}{x^2}$

B  $y = 5x^2$

D  $y = \frac{5}{x^2}$

- 10 Dalam Rajah 4,  $PQ$  ialah garis lurus dengan kecerunan  $-\frac{3}{4}$ .

*In Diagram 4,  $PQ$  is a straight line with gradient  $-\frac{3}{4}$ .*



Rajah/Diagram 4

Cari pintasan- $y$  bagi garis lurus  $PQ$ .

*Find the  $y$ -intercept of the straight line  $PQ$ .*

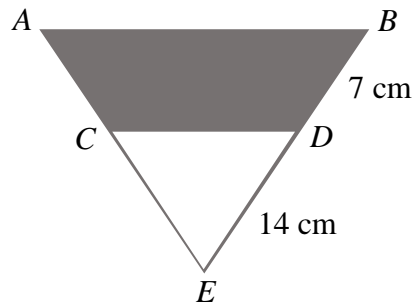
A  $-3$

C  $3$

B  $-12$

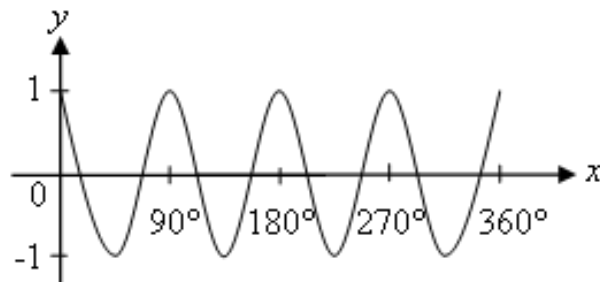
D  $12$

- 11** Rajah 5 menunjukkan segi tiga  $ABE$  ialah imej bagi segi tiga  $CDE$  di bawah suatu pembesaran pada pusat  $E$ . Hitung faktor skala bagi pembesaran itu.  
*Diagram 5 shows that triangle  $ABE$  is the image of triangle  $CDE$  under an enlargement at centre  $E$ . Calculate the scale factor of the enlargement.*



Rajah/Diagram 5

- |          |               |          |               |
|----------|---------------|----------|---------------|
| <b>A</b> | $\frac{2}{3}$ | <b>C</b> | $\frac{1}{2}$ |
| <b>B</b> | $\frac{3}{2}$ | <b>D</b> | 2             |
- 12** Rajah 6 menunjukkan sebuah graf fungsi trigonometri.  
*Diagram 6 shows a graph of trigonometric function.*



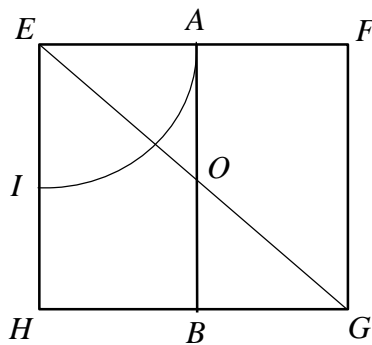
Rajah/Diagram 6

Apakah tempoh bagi fungsi trigonometri tersebut?  
*What is the period of the trigonometric function?*

- |          |             |          |             |
|----------|-------------|----------|-------------|
| <b>A</b> | $90^\circ$  | <b>C</b> | $270^\circ$ |
| <b>B</b> | $180^\circ$ | <b>D</b> | $360^\circ$ |



- 13 Rajah 7 menunjukkan sebuah segi empat sama  $EFGH$ .  
 Diagram 7 shows square  $EFGH$ .



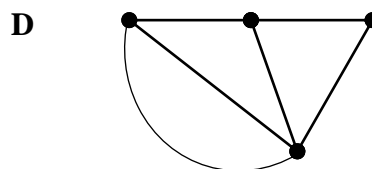
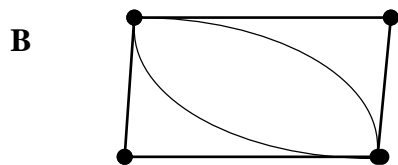
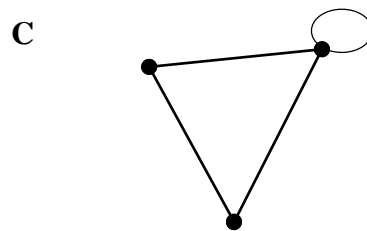
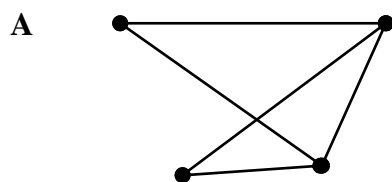
Rajah/Diagram 7

Antara berikut, yang manakah merupakan lokus bagi suatu titik yang bergerak dengan keadaan jaraknya adalah sentiasa sama dari titik  $F$  dan titik  $H$ ?

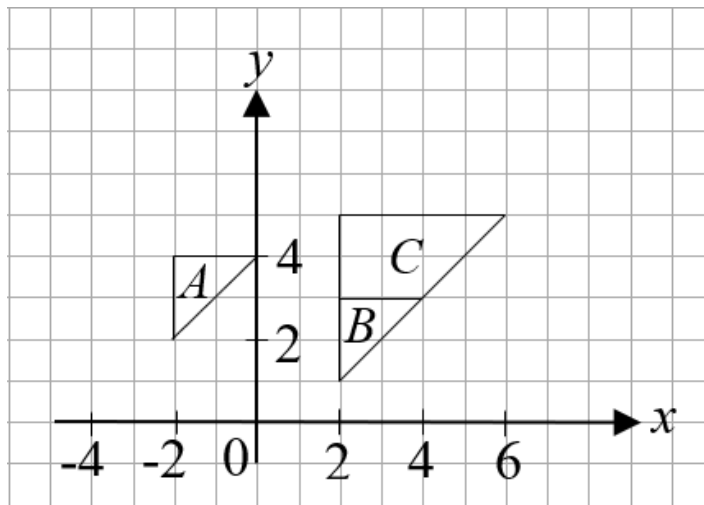
Which of the following is the locus of a point which moves such that its distance is always equal from point  $F$  and point  $H$ ?

- |  |   |
|--|---|
| <p><b>A</b> Lengkung <math>AI</math><br/>The arc <math>AI</math></p> <p><b>B</b> Garis lurus <math>AB</math><br/>The straight line <math>AB</math></p> | <p><b>C</b> Garis lurus <math>EG</math><br/>The straight line <math>EG</math></p> <p><b>D</b> Garis lurus <math>EH</math><br/>The straight line <math>EH</math></p> |
|--|---|

- 14 Manakah antara berikut adalah graf mudah?  
 Which of the following is a simple graph?



- 15 Rajah 8 menunjukkan tiga bentuk,  $A$ ,  $B$  dan  $C$  dilukis pada satah Cartes. *Diagram 8 shows three shapes,  $A$ ,  $B$  and  $C$  drawn on a Cartesian plane.*



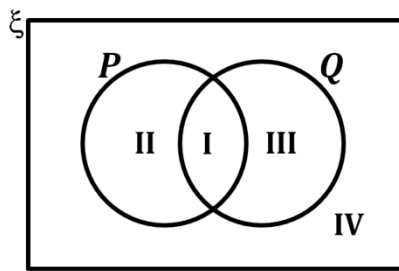
Rajah/Diagram 8

Bentuk  $B$  ialah imej bagi bentuk  $A$  di bawah suatu gabungan transformasi  $MN$ . Tentukan transformasi  $M$ , transformasi  $N$  dan transformasi tunggal yang setara dengan gabungan transformasi  $MN$ .

*Shape  $B$  is the image of shape  $A$  under a combined transformation  $MN$ . Determine the transformation  $M$ , transformation  $N$  and the single transformation which is equivalent to the transformation  $MN$ .*

	$M$	$N$	<b>Transformasi tunggal yang setara</b> <i>Equivalent single transformation</i>
<b>A</b>	Pembesaran <i>Enlargement</i>	Putaran <i>Rotation</i>	Pembesaran <i>Enlargement</i>
<b>B</b>	Putaran <i>Rotation</i>	Pembesaran <i>Enlargement</i>	Pantulan <i>Reflection</i>
<b>C</b>	Pembesaran <i>Enlargement</i>	Pembesaran <i>Enlargement</i>	Translasi <i>Translation</i>
<b>D</b>	Translasi <i>Translation</i>	Pantulan <i>Reflection</i>	Pembesaran <i>Enlargement</i>

- 16 Rajah 9 menunjukkan suatu gambar rajah Venn.  
 Diagram 9 shows a Venn diagram.



Rajah/Diagram 9

Diberi bahawa set semesta,  $\xi = \{\text{integer}\}$ , set  $P = \{\text{gandaan } 3\}$  dan set  $Q = \{\text{nombor genap}\}$ .  
 Antara rantau I, II, III atau IV, yang manakah mengandungi integer 45?  
 It is given that the universal set,  $\xi = \{\text{integer}\}$ , set  $P = \{\text{multiples of } 3\}$  and set  $Q = \{\text{even numbers}\}$ .  
 Among regions I, II, III or IV which one contains the integer 45?

- |          |           |          |            |
|----------|-----------|----------|------------|
| <b>A</b> | <b>I</b>  | <b>C</b> | <b>III</b> |
| <b>B</b> | <b>II</b> | <b>D</b> | <b>IV</b>  |

- 17 Premis 1 : Jika  $y$  kurang daripada sifar, maka  $y$  adalah nombor negatif.  
 Premise 1 : If  $y$  less than zero, then  $y$  is a negative number.

Premis 2 : .....  
 Premise 2 : .....

Kesimpulan :  $-2$  adalah nombor negatif.  
 Conclusion :  $-2$  is a negative number.

Berdasarkan hujah di atas, nyatakan Premis 2 bagi melengkapkan hujah.  
 Based on the above argument, state Premise 2 to complete the argument.

- |          |   |          |   |
|----------|---|----------|---|
| <b>A</b> | Semua nombor yang kurang daripada sifar adalah nombor negatif.<br>All numbers that are less than zero are negative numbers. | <b>C</b> | $y$ adalah benar.<br>$y$ is true.                   |
| <b>B</b> | $y$ kurang daripada sifar.<br>$y$ less than zero.   | <b>D</b> | $-2$ kurang daripada sifar.<br>$-2$ less than zero. |

- 18** Rajah 10 menunjukkan ketinggian 25 orang murid Tingkatan 5 Sigma yang diwakili oleh plot batang-dan-daun.  
Diagram 10 shows the height of 25 students of Form 5 Sigma represented by a stem-and-leaf plot.

Batang / Stem	Daun / Leaf
14	7 8 9 9
15	0 1 2 3 5 5 5 7 7 8 9
16	3 4 4 5 7 8 8
17	0 1 1

Kekunci : 14 | 7 bermaksud 147 cm

Key : 14 / 7 means 147 cm

Rajah/Diagram 10

Apakah beza dalam ketinggian, antara murid tertinggi dan murid terendah?  
What is the difference in height between the tallest and the shortest students?

- A 9 cm  
B 12 cm  
C 24 cm  
D 30 cm
- 19** Jadual 1 menunjukkan markah Matematik bagi 30 orang murid dalam Ujian Diagnostik 1.  
Table 1 shows Mathematics marks for 30 students in Diagnostic 1 test.

Markah Marks	Bilangan murid Numbers of students
1 – 20	3
21 – 40	6
41 – 60	7
61 – 80	10
81 – 100	4

Jadual/Table 1

Cari min markah / Find the mean mark.

- A 54.5  
B 64.5  
C 55.4  
D 65.4
- 20** Sehelai bendera dipilih secara rawak daripada sebuah kotak yang mengandungi 7 bendera negeri Selangor, 4 bendera Negeri Sembilan dan 2 bendera Negeri Melaka. Cari kebarangkalian bahawa bendera negeri Selangor atau Melaka dipilih.  
A flag is randomly selected from a box containing 7 Selangor state flags, 4 Negeri Sembilan state flags and 2 Malacca state flags. Find the probability that Selangor or Malacca state flag is chosen.
- A  $\frac{7}{13}$   
B  $\frac{9}{13}$   
C  $\frac{5}{11}$   
D  $\frac{6}{11}$

- 21 Ringkaskan:  
Simplify:

$$\left(\frac{-6a^3b^{-\frac{1}{6}}}{c^2}\right)^3 \times b^{\frac{1}{2}}c^3$$

- |   |                      |   |                       |
|---|----------------------|---|-----------------------|
| A | $\frac{216a^9}{c^3}$ | C | $-\frac{18a^9b}{c^3}$ |
| B | $\frac{18a^9b}{c^3}$ | D | $-\frac{216a^9}{c^3}$ |

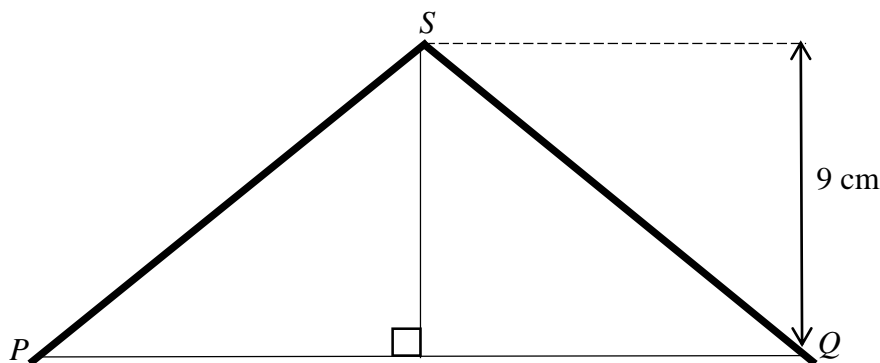
- 22 Diberi bahawa 30 biji logam berbentuk sfera dengan setiap satu berjejari 35cm dileburkan untuk membentuk 70 buah kon yang serupa. Cari isipadu, dalam  $\text{cm}^3$ , bagi sebuah kon itu.  
*Given that 30 sphere-shaped metal, each with a radius of 35cm are melted to form 70 similar cones. Find the volume, in  $\text{cm}^3$  of a cone.*

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

- |   |                   |   |                   |
|---|-------------------|---|-------------------|
| A | $6.6 \times 10^4$ | C | $7.7 \times 10^4$ |
| B | $6.6 \times 10^3$ | D | $7.7 \times 10^3$ |

- 23 Rajah 11 menunjukkan pelan bumbung sebuah reban ayam. Pak Minhat bercadang untuk menukar palang lama,  $PQ$  dengan yang baru. Dia perlu tahu panjang palang itu untuk membelinya.

*Diagram 11 shows a plan of a roof of chicken coop. Pak Minhat wants to replace the old beam,  $PQ$  with the new one. He needs to know the length of the beam to buy it.*



Rajah/Diagram 11

Diberi persamaan garis lurus palang bagi atap,  $PS$  ialah  $4y = 3x + 36$ . Cari panjang, dalam cm, palang  $PQ$  itu.

*It is given that the equation of the rake of the roof,  $PS$  is  $4y = 3x + 36$ . Find the length, in cm, of the beam  $PQ$ .*

- |   |    |   |    |
|---|----|---|----|
| A | 12 | C | 24 |
| B | 16 | D | 30 |

- 24** Sebuah padang yang berbentuk segi empat tepat mempunyai panjang dan lebar masing-masing ialah  $(x + 8)$  m dan  $(x + 4)$  m. Jika luas padang ialah  $192 \text{ m}^2$ , hitung perimeter, dalam m, padang tersebut.

*A rectangular field has a length and width of  $(x + 8)$  m and  $(x + 4)$  m respectively. If the area of the field is  $192 \text{ m}^2$ , calculate the perimeter, in m, of the field.*

- |          |    |          |    |
|----------|----|----------|----|
| <b>A</b> | 80 | <b>C</b> | 40 |
| <b>B</b> | 56 | <b>D</b> | 32 |

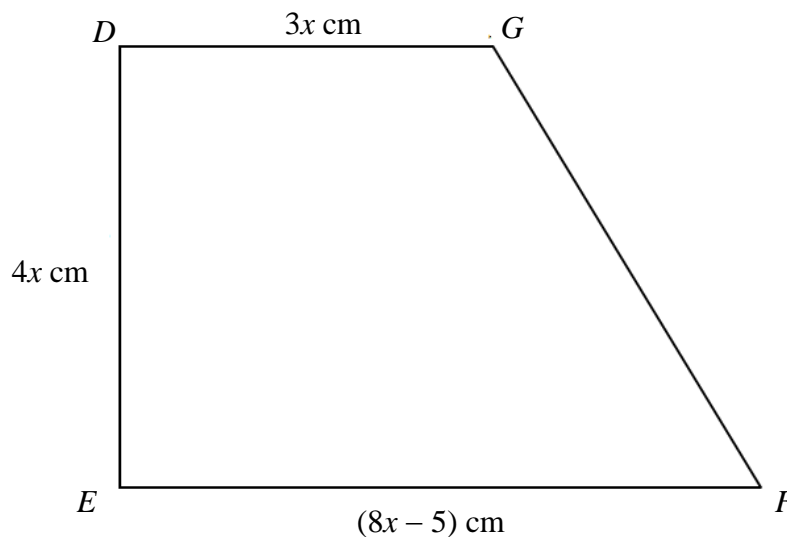
- 25** Titik manakah yang memuaskan ketaksamaan  $3x + y > 12$ ?

*Which point satisfies the inequality  $3x + y > 12$ ?*

- |          |        |          |        |
|----------|--------|----------|--------|
| <b>A</b> | (6, 8) | <b>C</b> | (1, 5) |
| <b>B</b> | (2, 6) | <b>D</b> | (0, 0) |

- 26** Rajah 12 menunjukkan sebuah trapezium  $DEFG$ .

*Diagram 12 shows a trapezium  $DEFG$*



Rajah/Diagram 12

Diberi  $A$  ialah luas bagi trapezium  $DEFG$ . Ungkapkan luas trapezium  $DEFG$  dalam sebutan  $x$ .

*Given  $A$  is the area of trapezium  $DEFG$ . Express the area of trapezium  $DEFG$  in terms of  $x$ .*

- |          |                  |          |                   |
|----------|------------------|----------|-------------------|
| <b>A</b> | $A = 18x^2 - 15$ | <b>C</b> | $A = 22x^2 - 10x$ |
| <b>B</b> | $A = 22x^2 - 5$  | <b>D</b> | $A = 88x^2 - 20x$ |

- 27** Isi padu sebuah kon,  $V \text{ cm}^3$ , berubah secara langsung dengan tinggi,  $h \text{ cm}$ , dan kuasa dua jejari tapaknya,  $j \text{ cm}$ . Sebuah kon dengan tinggi 21 cm dan jejari 6 cm mempunyai isi padu  $792 \text{ cm}^3$ . Hitung isi padu dalam  $\text{cm}^3$ , kon dengan tinggi 14 cm dan jejari 15 cm.
- The volume of a cone,  $V \text{ cm}^3$ , varies directly with the height,  $h \text{ cm}$ , and the square of the radius of the base,  $j \text{ cm}$ . A cone with a height of 21 cm and a radius of 6 cm has a volume of  $792 \text{ cm}^3$ . Calculate the volume in  $\text{cm}^3$  of a cone with a height of 14 cm and a radius of 15 cm.*

- |          |      |          |      |
|----------|------|----------|------|
| <b>A</b> | 3300 | <b>C</b> | 3007 |
| <b>B</b> | 3080 | <b>D</b> | 2806 |

- 28** Diberi / Given :

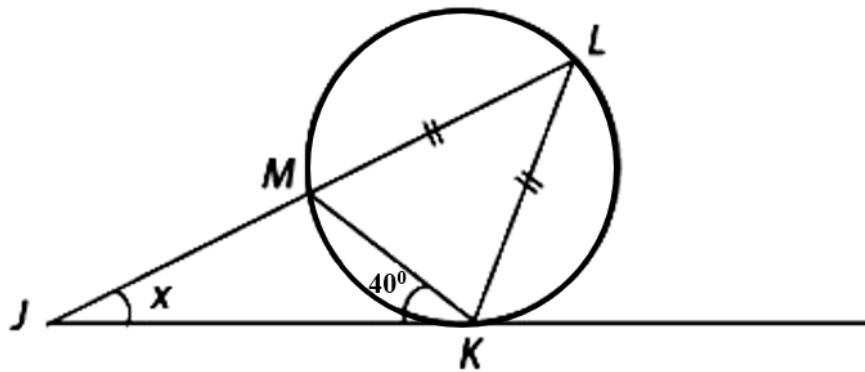
$$(4 \ 2) \begin{pmatrix} x \\ 7 \end{pmatrix} = (10)$$

Cari nilai  $x$ .

*Find the value of  $x$*

- |          |    |          |   |
|----------|----|----------|---|
| <b>A</b> | -6 | <b>C</b> | 1 |
| <b>B</b> | -1 | <b>D</b> | 6 |

- 29** Dalam Rajah 13,  $JK$  ialah tangen kepada bulatan  $KLM$  di  $K$  dan  $JML$  ialah garis lurus.
- In Diagram 13,  $JK$  is a tangent to the circle  $KLM$  at  $K$  and  $JML$  is a straight line.*



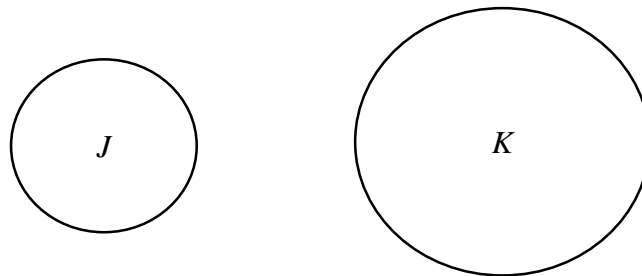
Rajah/Diagram 13

Hitung nilai  $x$ .

*Calculate the value of  $x$ .*

- |          |            |          |            |
|----------|------------|----------|------------|
| <b>A</b> | $50^\circ$ | <b>C</b> | $30^\circ$ |
| <b>B</b> | $40^\circ$ | <b>D</b> | $20^\circ$ |

- 30** Rajah 14 menunjukkan dua bulatan,  $J$  dan  $K$  yang dilukis dengan skala  $1 : n$   
*Diagram 14 shows two circles,  $J$  and  $K$  drawn with the scale  $1 : n$ .*



Rajah/Diagram 14

Diberi luas bulatan  $J$  dan bulatan  $K$ , masing-masing ialah  $154 \text{ cm}^2$  dan  $7546 \text{ cm}^2$ . Hitung nilai  $n$ .

*Given the area of circle  $J$  and circle  $K$  is  $154 \text{ cm}^2$  and  $7546 \text{ cm}^2$  respectively. Calculate the value of  $n$ .*

- |  |  |
|--|--|
| <p><b>A</b>     <math>\frac{1}{49}</math></p> <p><b>B</b>     49</p> | <p><b>C</b>     <math>\frac{1}{7}</math></p> <p><b>D</b>     7</p> |
|--|--|
- 31** Setiap pepejal geometri berikut mempunyai dongakan sisi masing-masing yang sama **kecuali**  
*Each of the following solids has the same elevations respectively **except***
- |   |  |
|---|--|
| <p><b>A</b>     Sfera<br/>          <i>Sphere</i></p> <p><b>B</b>     Kon<br/>          <i>Cone</i></p> | <p><b>C</b>     Silinder<br/>          <i>Cylinder</i></p> <p><b>D</b>     Piramid bertapak segiempat<br/>          <i>Rectangular based pyramid</i></p> |
|---|--|
- 32** Sebuah beg mengandungi satu biji guli berlabel  $P$ , satu biji guli berlabel  $Q$  dan satu biji guli berlabel  $R$ . Dua biji guli dipilih secara rawak daripada beg tersebut satu demi satu tanpa pemulangan. Tentukan ruang sampelnya.  
*A bag contains a marble labeled with  $P$ , a marble labeled with  $Q$  and a marble labeled with  $R$ . Two marbles are chosen at random from the bag one by one without replacement. Determine the sample space.*
- |  |   |
|--|---|
| <p><b>A</b>     <math>\{P, Q, R\}</math></p> <p><b>B</b>     <math>\{PP, QQ, RR\}</math></p> | <p><b>C</b>     <math>\{PQ, PR, QP, QR, RP, RQ\}</math></p> <p><b>D</b>     <math>\{PP, PQ, PR, QQ, QP, QR, RR, RP, RQ\}</math></p> |
|--|---|



- 33** Berikut adalah maklumat mengenai Encik Murugam bagi bulan tertentu  
*The following shows some information about Encik Murugam for certain month.*

Pendapatan aktif / *Active income*: RM 4000

Pendapatan pasif / *Passive income*: RM 800

Perbelanjaan Tetap / *Fixed Expenses*: RM 1800

Perbelanjaan Tidak Tetap / *Variable Expenses*: RM 2000

Rancangan / *Plan*: Memiliki satu Komputer Riba dalam tempoh 6 bulan.

*Own a notebook in 6 months.*

Berpandukan maklumat di atas, harga maksimum komputer riba tersebut ialah

*Based on the above information, the maximum price for the notebook is*

- |          |        |          |        |
|----------|--------|----------|--------|
| <b>A</b> | RM1000 | <b>C</b> | RM4800 |
| <b>B</b> | RM6000 | <b>D</b> | RM3000 |

- 34** Jadual 2 berikut menunjukkan jenis bahan bacaan yang digemari oleh 50 pelajar.  
*Table 2 below shows the favourite reading materials of 50 pupils.*

<b>Bahan bacaan</b> <i>Reading material</i>	<b>Bilangan pelajar</b> <i>Number of students</i>
Majalah sahaja <i>Magazine only</i>	3
Komik sahaja <i>Comic only</i>	10
Majalah dan komik sahaja <i>Magazine and comic only</i>	12
Majalah dan novel sahaja <i>Magazine and novel only</i>	7
Novel dan komik sahaja <i>Novel and comic only</i>	9
Majalah, komik dan novel <i>Magazine, comic and novel</i>	1

Jadual/Table 2

Hitung bilangan pelajar yang gemar membaca novel.

*Calculate the number of students who like to read novel.*

- |          |    |          |    |
|----------|----|----------|----|
| <b>A</b> | 29 | <b>C</b> | 23 |
| <b>B</b> | 32 | <b>D</b> | 25 |

- 35 Encik Hanif tinggal di Tawau, Sabah. Dia ingin membeli satu polisi insurans motor dan berikut adalah maklumat kenderaan yang ingin diinsuranskan.

*Encik Hanif stays in Tawau, Sabah. He wants to buy a motor insurance policy. The following is the information regarding the vehicle he wants to insure.*

*Jumlah yang ingin diinsuranskan/ <i>Sum insured</i>	: RM66 000
*Umur kenderaan/ <i>Age of vehicle</i>	: 7 years
*Kapasiti enjin/ <i>Engine capacity</i>	: 1594cc
*NCD	: 30%

Jadual 3 menunjukkan kadar premium di bawah Tarif Motor bagi polisi motor yang dikeluarkan di Semenanjung Malaysia, Sabah dan Sarawak.

*Table 3 shows the premium rate under the Motor Tariff for motor policies issued in Peninsular Malaysia, Sabah and Sarawak.*

Kapasiti enjin tidak melebihi <i>Engine capacity not exceeding (cc)</i>	Peninsular Malaysia		Sabah dan Sarawak	
	Polisi Komprehensif <i>Comprehensive policy (RM)</i>	Polisi pihak ketiga <i>Third party policy (RM)</i>	Polisi Komprehensif <i>Comprehensive policy (RM)</i>	Polisi pihak ketiga <i>Third party policy (RM)</i>
1 400	273.80	120.60	196.20	67.50
1 650	305.50	135.00	220.00	75.60
2 200	339.10	151.20	243.90	85.20

Jadual/Table 3

\*Bagi polisi komprehensif, kadar yang dikenakan adalah bagi RM1 000 pertama daripada jumlah yang diinsuranskan.

*\*For comprehensive policy, the rate charged is for the first RM1 000 of the sum insured.*

Sumber: Jadual Tarif Motor 2015

*Source: Schedule of Motor Tariff 2015*

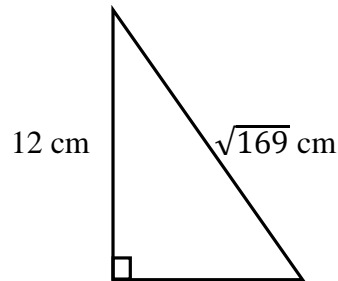
Hitung premium kasar bagi polisi pihak ketiga berdasarkan maklumat di atas.

*Calculate the gross premium for the third-party policy based on the above information.*

- |   |          |   |           |
|---|----------|---|-----------|
| A | RM52.92  | C | RM1337.00 |
| B | RM154.00 | D | RM1077.65 |

- 36 Rajah 15 menunjukkan lukisan berskala bagi sebuah kolam berbentuk segi tiga yang dilukis mengikut skala 1 : 300.

*Diagram 15 shows a scale drawing of a triangular pond drawn to a scale of 1: 300.*



Rajah/Diagram 15

Hitung perimeter sebenar, dalam  $m$ , kolam itu.

*Calculate the actual perimeter, in  $m$ , of the pond.*

- |   |      |   |       |
|---|------|---|-------|
| A | 10 m | C | 90 m  |
| B | 75 m | D | 110 m |
- 37 Diberi bahawa  $\begin{pmatrix} 6 & 1 \\ 4 & 3 \end{pmatrix} \begin{pmatrix} -3 \\ 6 \end{pmatrix} = \frac{1}{2m} \begin{pmatrix} 24 \\ -12 \end{pmatrix}$ , hitung nilai  $m$ .
- Given that  $\begin{pmatrix} 6 & 1 \\ 4 & 3 \end{pmatrix} \begin{pmatrix} -3 \\ 6 \end{pmatrix} = \frac{1}{2m} \begin{pmatrix} 24 \\ -12 \end{pmatrix}$ , calculate the value of  $m$ .*
- |   |                |   |                |
|---|----------------|---|----------------|
| A | $-\frac{1}{2}$ | C | $-\frac{1}{4}$ |
| B | -10            | D | -1             |
- 38 Rajah 16 menunjukkan satu set data.  
*Diagram 16 shows a set of data.*

**5, 8, 4.5, 9, 4.5, 7.5, 2, 7, 6, 5, 3**

Rajah/Diagram 16

Cari julat antara kuartil bagi set data itu.

*Find the interquartile range of the set of data.*

- |   |   |   |   |
|---|---|---|---|
| A | 2 | C | 5 |
| B | 3 | D | 7 |

- 39 Tukarkan  $124_5$  kepada nombor dalam asas dua.

*Convert  $124_5$  to a number in base two.*

A  $111101_2$

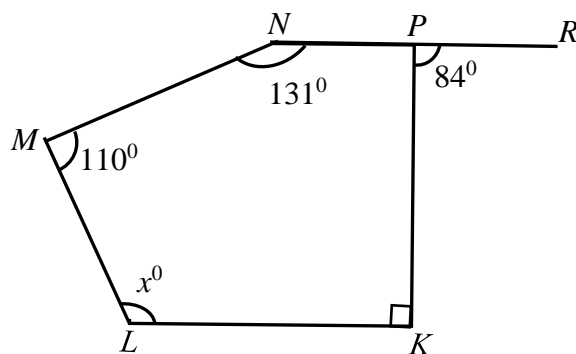
C  $100011_2$

B  $101000_2$

D  $100111_2$

- 40 Rajah 17,  $KLMNP$  ialah sebuah pentagon dan  $NPR$  adalah gari lurus.

*Diagram 17,  $KLMNP$  is a pentagon and  $NPR$  is a straight line.*



Rajah/Diagram 17

Cari nilai  $x$ .

*Find the value of  $x$ .*

A 113

C 125

B 118

D 128

**KERTAS PEPERIKSAAN TAMAT  
END OF QUESTION PAPER**