

Jawab semua soalan.

Answer all questions.

- 1 Tuliskan nombor berikut dengan awalan yang betul:

*Write the following number with the correct initial:*

5 900 000 000 gram

- A 5.9 Gg
- B 5.9 Mg
- C 5.9 kg
- D 5.9 ng

- 2 Rajah 1 menunjukkan sebungkus kertas foto bersaiz A4. Unit 'gsm' kertas merujuk kepada ukuran berat kertas dalam gram bagi semeter persegi kertas tersebut.

*Diagram 1 shows a pack of A4 size photo paper. The unit of 'gsm' paper refers to the weight of paper in grams per square metre of the paper.*



Rajah 1  
Diagram 1

Hitung berat anggaran, dalam gram, bagi sehelai kertas foto bersaiz A4 230 gsm yang berukuran 210 mm  $\times$  297 mm.

Berikan jawapan anda betul kepada empat angka bererti.

*Calculate the approximate weight, in grams, of a sheet of A4 size photo paper 230 gsm with the measurement of 210 mm  $\times$  297 mm.*

*Give your answer correct to four significant figures.*

- A 14.34
- B 14.3451
- C 0.003688
- D 0.0002712



- 3 Pesawat pejuang F/A-18D Hornet milik Tentera Udara Diraja Malaysia (TUDM) mampu mencapai kelajuan  $1\,915\text{ km j}^{-1}$ .

Hitung jumlah masa, dalam minit, yang diambil oleh pesawat tersebut untuk terbang dari Kuala Lumpur ke Singapura, dengan jarak  $3.15 \times 10^5\text{ m}$ , pada kelajuan maksimum.

(Abaikan faktor-faktor lain yang mempengaruhi penerbangan)

*F/A-18D Hornet aircraft fighters owned by Royal Malaysian Air Force (TUDM) are capable to achieve speed of  $1\,915\text{ km h}^{-1}$ .*

*Calculate the total time, in minutes, taken by the aircraft to fly from Kuala Lumpur to Singapore with the distance of  $3.15 \times 10^5\text{ m}$ , at maximum speed.*

*(Ignore other factors that affect the flight)*

- A 9.87
- B 6.08
- C 0.365
- D 0.164

- 4 Cari nilai tempat bagi digit yang bergaris di bawah.

*Find the place value of digit that underlined below.*

634<sub>7</sub>

- A 319
- B 294
- C 49
- D 42

- 5 Hitung nilai bagi  $452_6 - 33_6 =$

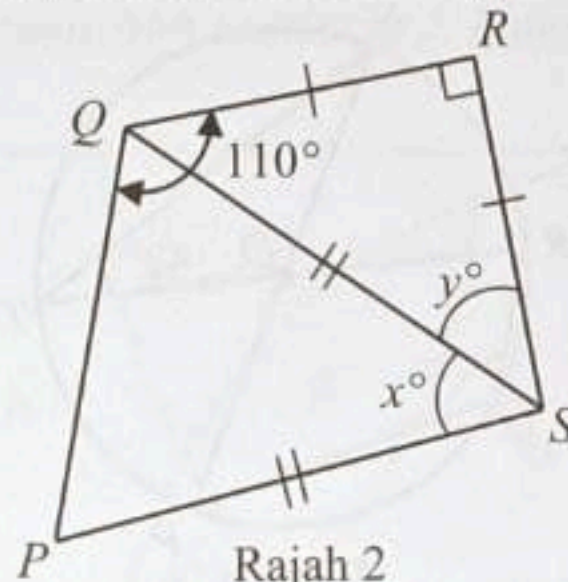
*Calculate the value of  $452_6 - 33_6 =$*

- A  $419_6$
- B  $423_6$
- C  $415_6$
- D  $525_6$



- 6 Dalam Rajah 2,  $PQS$  dan  $QRS$  ialah dua buah segi tiga sama kaki.

*In Diagram 2,  $PQS$  and  $QRS$  are two isosceles triangles.*



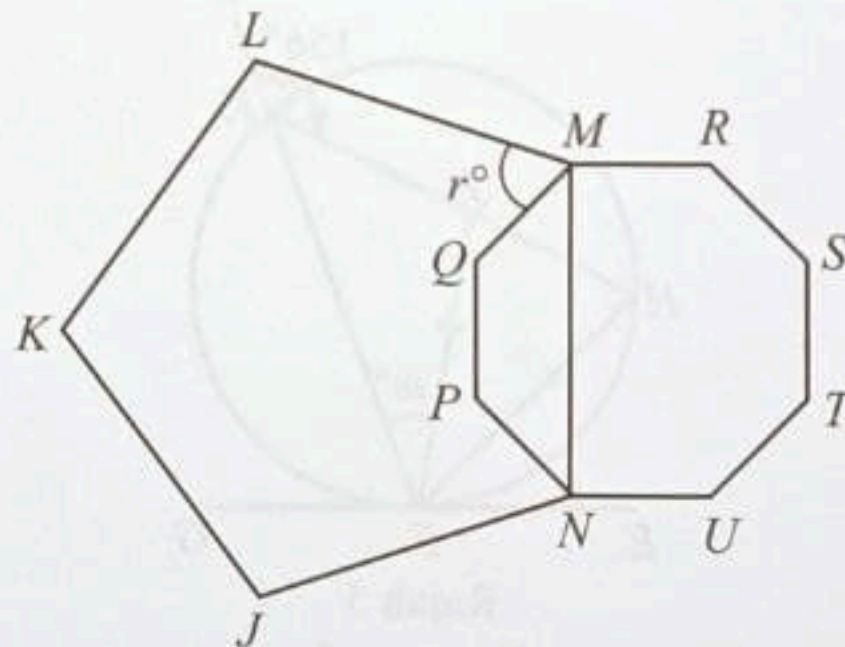
Rajah 2  
Diagram 2

Cari nilai bagi  $x + y$ .

*Find the value of  $x + y$ .*

- A 90
- B 95
- C 100
- D 110

- 7 Rajah 3 menunjukkan sebuah pentagon sekata  $JKLMN$  dan oktagon sekata  $NPQMRSTU$ .  
*Diagram 3 shows a regular pentagon  $JKLMN$  and regular octagon  $NPQMRSTU$ .*



Rajah 3  
Diagram 3

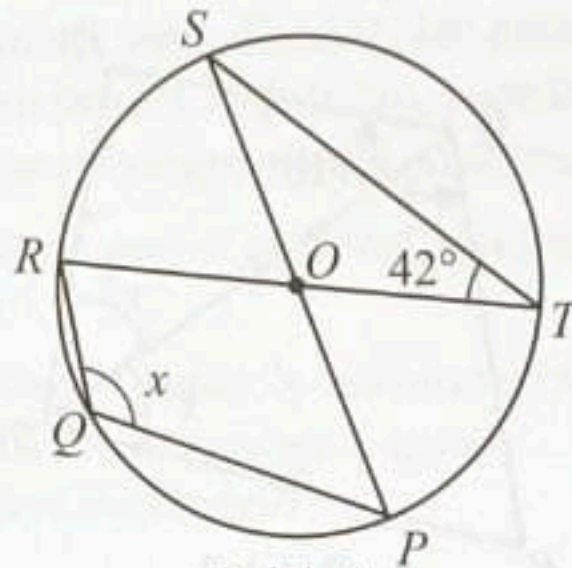
Cari nilai bagi  $r$ .

*Find the value of  $r$ .*

- A 27
- B 45
- C 54
- D 63



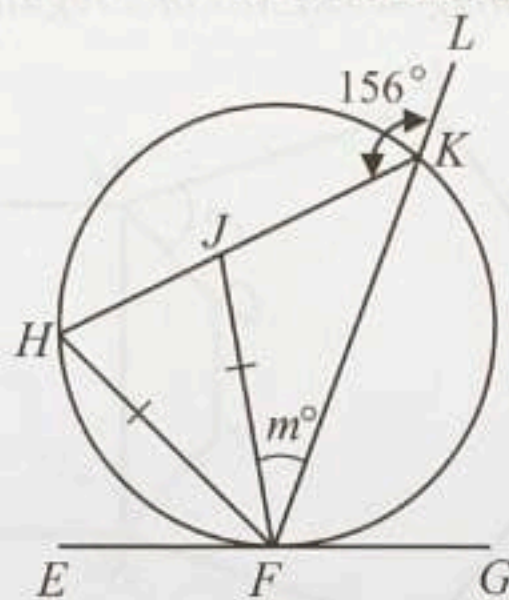
- 8 Rajah 4 menunjukkan sebuah bulatan berpusat di  $O$ .  $POS$  dan  $ROT$  ialah diameter bulatan itu.  
 Diagram 4 shows a circle with centre  $O$ .  $POS$  and  $ROT$  are diameters of the circle.



Rajah 4  
 Diagram 4

Cari nilai bagi  $x$ .  
 Find the value of  $x$ .

- A 84  
 B 96  
 C 132  
 D 138
- 9 Dalam Rajah 5,  $EFG$  ialah tangen kepada bulatan  $FHK$  di  $F$ .  $FKL$  ialah garis lurus.  
 In Diagram 5,  $EFG$  is a tangent to the circle  $FHK$  at  $F$ .  $FKL$  is a straight line.



Rajah 5  
 Diagram 5

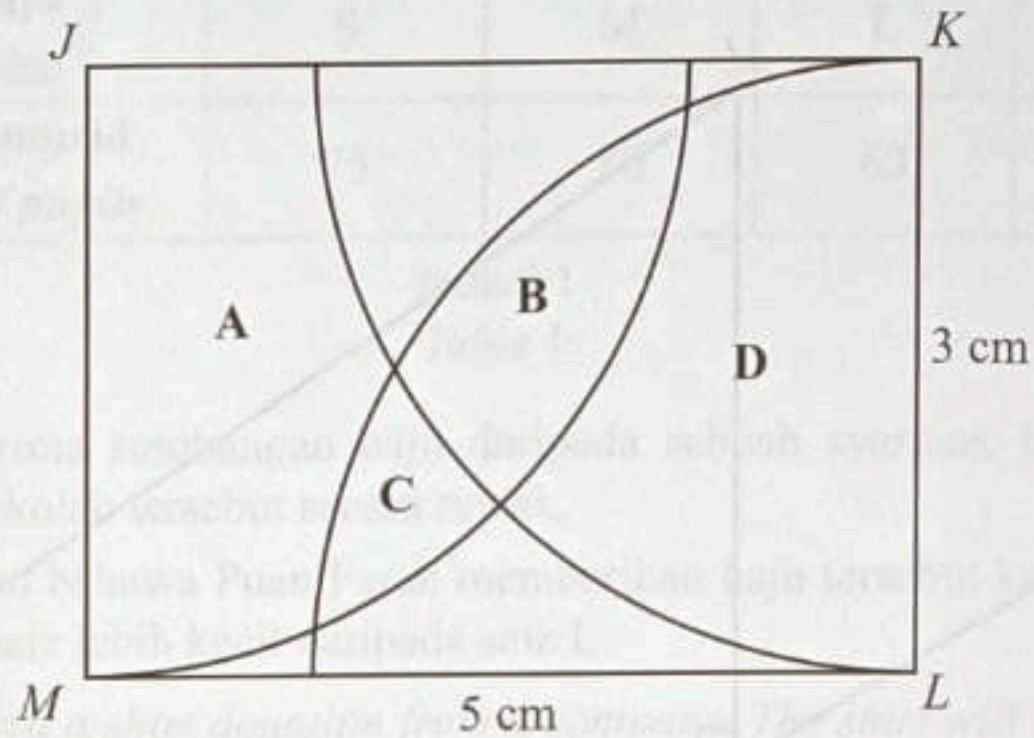
Diberi  $\angle LFG = 62^\circ$ .  
 Cari nilai  $m$ .  
 Given  $\angle LFG = 62^\circ$ .  
 Find the value of  $m$ .

- A 24  
 B 28  
 C 34  
 D 38



- 10 Rajah 6 menunjukkan tiga sukuan bulatan yang berpusat di titik  $J$ ,  $K$  dan  $L$  dalam sebuah segi empat tepat  $JKLM$ .

Diagram 6 shows three quadrants with centers at  $J$ ,  $K$  and  $L$  in a rectangle  $JKLM$ .



Rajah 6  
Diagram 6

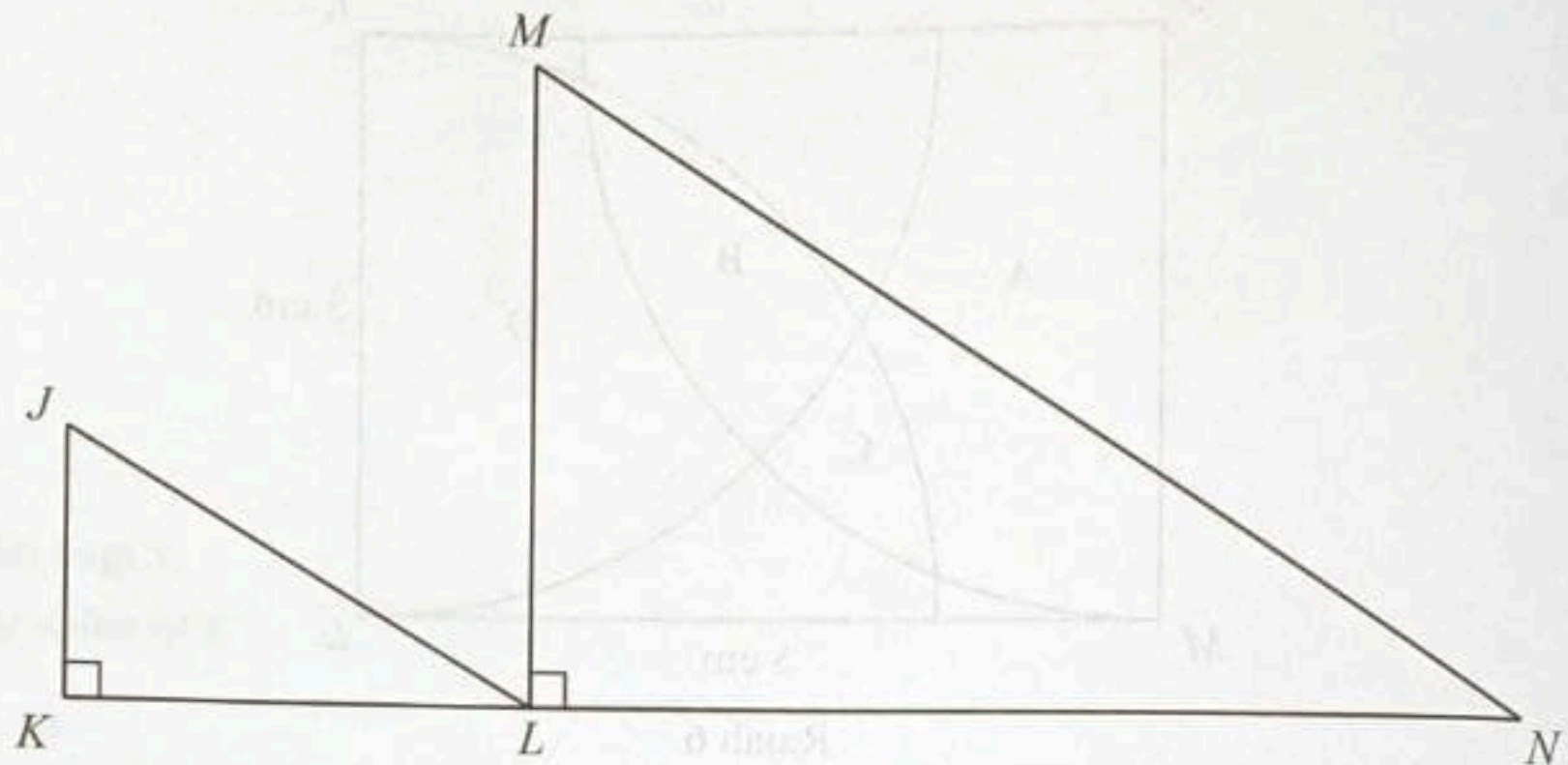
Antara titik  $A$ ,  $B$ ,  $C$  dan  $D$ , yang manakah sentiasa berada pada jarak kurang daripada 3 cm dari titik  $J$ ,  $K$  dan  $L$ ?

Which of the points  $A$ ,  $B$ ,  $C$  and  $D$ , is always at a distance of less than 3 cm from points  $J$ ,  $K$  and  $L$ ?



- 11 Rajah 7 menunjukkan dua buah segi tiga bersudut tegak.  $\triangle JKL$  ialah imej bagi  $\triangle MLN$  di bawah suatu pembesaran.

Diagram 7 shows two right-angled triangles.  $\triangle JKL$  is the image for  $\triangle MLN$  under an enlargement.



Rajah 7  
Diagram 7

Diberi bahawa  $JK = 3ML$ .

Hitung faktor skala bagi pembesaran itu.

Given that  $JK = 3ML$ .

Calculate the scale factor for that enlargement.

- A  $\frac{7}{3}$   
 B  $\frac{3}{7}$   
 C  $-\frac{3}{7}$   
 D  $-\frac{7}{3}$



- 12 Jadual 1 menunjukkan hasil tinjauan yang telah dijalankan oleh Puan Farah di sebuah sekolah.  
 Table 1 shows the results of a survey conducted by Puan Farah in a school.

| Saiz baju<br>Shirt size            | S  | M  | L  | XL |
|------------------------------------|----|----|----|----|
| Bilangan murid<br>Number of pupils | 75 | 80 | 63 | 32 |

Jadual 1

Table 1

Puan Farah menerima sumbangan baju daripada sebuah syarikat. Baju itu akan diberikan kepada murid di sekolah tersebut secara rawak.

Cari kebarangkalian bahawa Puan Farah memberikan baju tersebut kepada murid-murid yang memakai baju bersaiz lebih kecil daripada saiz L.

*Puan Farah received a shirt donation from a company. The shirt will be given to pupils at the school at random.*

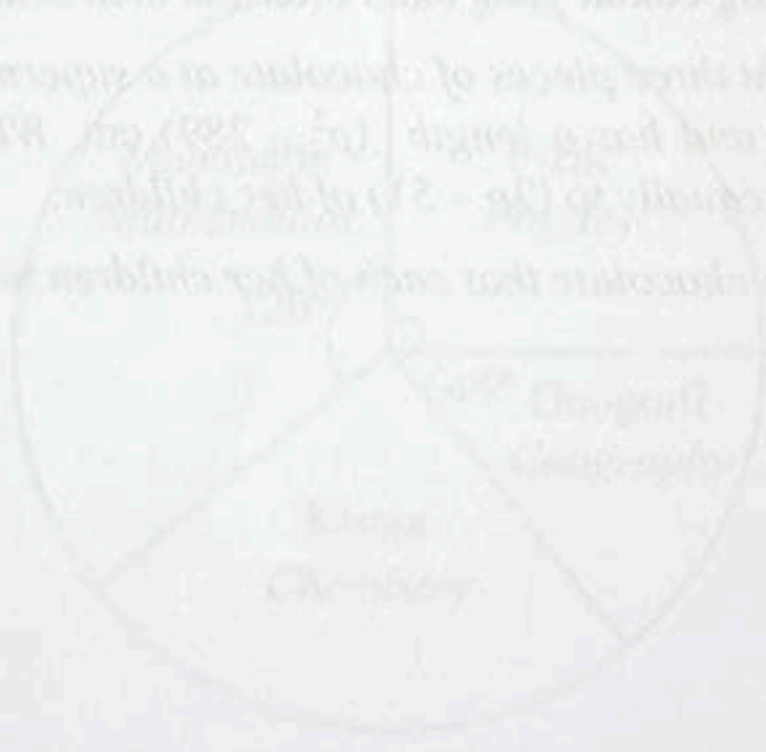
*Find the probability that Puan Farah gives the shirt to pupils who wear shirts of size smaller than size L.*

A  $\frac{109}{125}$

B  $\frac{31}{50}$

C  $\frac{63}{250}$

D  $\frac{16}{125}$



$(1) = 36$   
 $(2) = 36$   
 $(3) = 9$   
 $(4) = 9$



- 13 Nabil dan Meisin bekerjasama untuk menjalankan satu projek di sekolah mereka. Mereka bercadang untuk membentuk sebuah model tapak pameran berbentuk sebuah segi empat tepat. Mereka memerlukan  $(280 - 6k)$  cm tali bagi membentuk perimeter model tersebut. Lebar bagi segi empat tepat itu ialah  $7k$  cm.

Berapakah luas, dalam  $\text{cm}^2$ , bagi model tapak pameran tersebut?

*Nabil and Meisin worked together to launch a project in their school. They plan to form an exhibition site model in the shape of rectangle. They need  $(280 - 6k)$  cm rope to form the model's perimeter. The width of the rectangle is  $7k$  cm.*

*What is the area, in  $\text{cm}^2$ , of the exhibition site model?*

- A  $7k(280 - 13k)$
- B  $7k(280 - 6k)$
- C  $7k(140 - 10k)$
- D  $7k(140 - 3k)$

- 14 Puan Monica telah membeli tiga keping coklat di sebuah pasar raya. Coklat yang dibeli itu berbentuk segi empat tepat dan mempunyai panjang berukuran  $(p^2 - 289)$  cm. Setibanya di rumah, dia ingin membahagikan coklat tersebut secara sama rata kepada  $(3p - 51)$  orang anaknya.

Berapakah ukuran panjang coklat yang akan diterima oleh setiap anaknya?

*Puan Monica had bought three pieces of chocolate at a supermarket. The chocolate purchased was in rectangle shape and has a length  $(p^2 - 289)$  cm. When she got home, she wants to distribute the chocolate equally to  $(3p - 51)$  of her children.*

*What is the length of the chocolate that each of her children will receive?*

- A  $3(p + 17)$
- B  $3(p - 17)$
- C  $(p - 17)$
- D  $(p + 17)$



- 15 Airil bercadang untuk membeli beberapa pasang baju di Pasar Raya Jetco. Pasar raya tersebut menawarkan diskaun sebanyak 15% untuk pembelian dua helai baju atau lebih. Airil membeli  $x$  helai baju jenama  $R$  dan  $y$  helai baju jenama  $S$ . Harga sehelai baju jenama  $R$  ialah RM38 dan sehelai baju jenama  $S$  berharga RM63.

Hitung harga baju yang perlu dibayar oleh Airil,  $P$ , dalam sebutan  $x$  dan  $y$ .

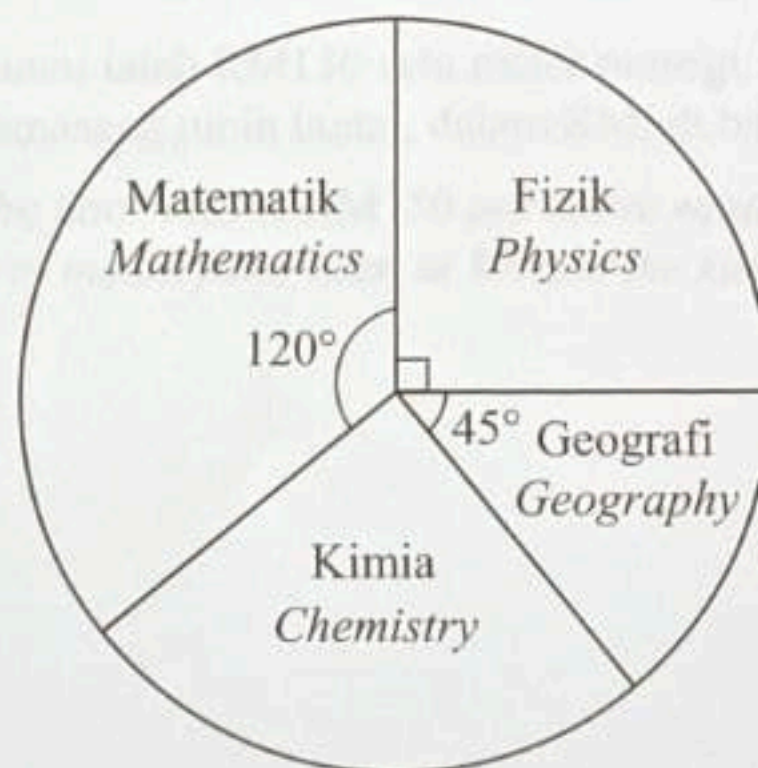
*Airil plans to buy a few shirts at Jetco Supermarket. The supermarket offers 15% discount on the purchase for two or more shirts. He bought  $x$  shirt brand  $R$  and  $y$  shirt brand  $S$ . The price of a shirt brand  $R$  is RM38 and a shirt brand  $S$  is RM63.*

*Calculate the price of the shirt to be paid by Airil,  $P$ , in terms of  $x$  and  $y$ .*

- A  $0.85(38x + 63y)$
- B  $0.15(38x + 63y)$
- C  $85(38x + 63y)$
- D  $15(38x + 63y)$

- 16 Sekumpulan pelajar di sebuah kolej diminta untuk mengundi subjek kegemaran mereka. Carta pai dalam Rajah 8 mewakili jumlah undian untuk setiap subjek.

*A group of students in a college were asked to vote for their favourite subject. The pie chart in Diagram 8 represents the number of votes for each subject.*



Rajah 8  
Diagram 8

Subjek Matematik memperoleh 25 lebih undi berbanding dengan subjek Kimia. Hitung bilangan pelajar yang mengambil bahagian dalam tinjauan tersebut.

*Mathematics subject obtained 25 more votes than Chemistry subject.*

*Calculate the number of students who took part in the survey.*

- A 600
- B 576
- C 420
- D 300



- 17 Jadual 2 ialah jadual kekerapan yang menunjukkan jisim tangkapan ikan oleh sekumpulan nelayan.

Table 2 is a frequency table which shows the mass of fish caught by a group of fisherman.

| Jisim tangkapan ikan (kg)<br>Mass of fish caught (kg) | 11 – 13 | 14 – 16 | 17 – 19 | 20 – 22 | 23 – 25 |
|-------------------------------------------------------|---------|---------|---------|---------|---------|
| Kekerapan<br>Frequency                                | 9       | 12      | $m$     | 14      | 2       |

Jadual 2

Table 2

Jika kelas median ialah 17 – 19, berapakah julat nilai  $m$ ?

If the median class is 17 – 19, what is the range of values of  $m$ ?

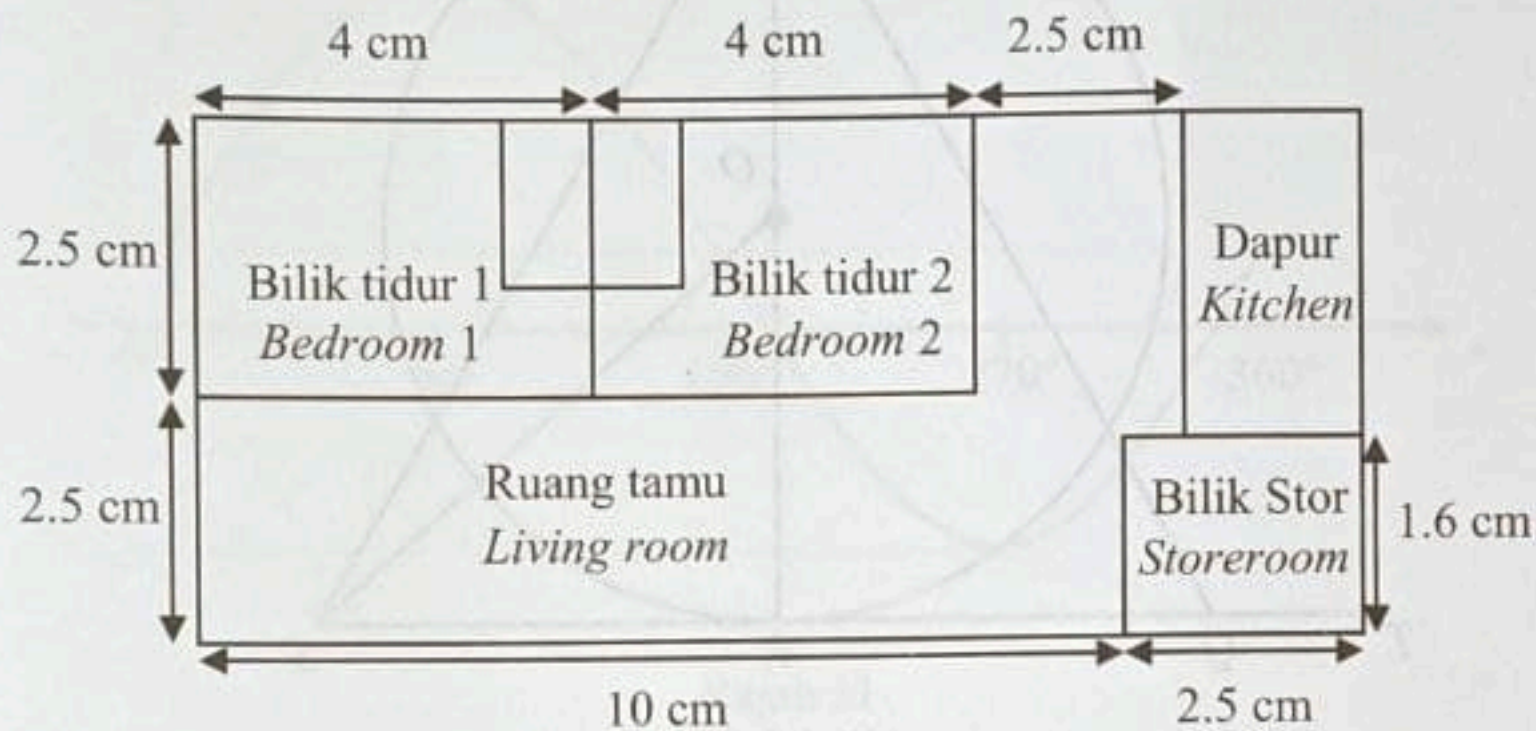
- A  $m < 5$
- B  $m \leq 5$
- C  $m > 5$
- D  $m \geq 5$





- 18 Rajah 9 menunjukkan lukisan berskala pelan lantai sebuah rumah yang berbentuk segi empat tepat. Diberi bahawa skala lukisan tersebut ialah 1 : 200.

*Diagram 9 shows a scaled drawing of the floor plan of a rectangular shape house. It is given that the scale of the drawing is 1 : 200.*



Rajah 9  
Diagram 9

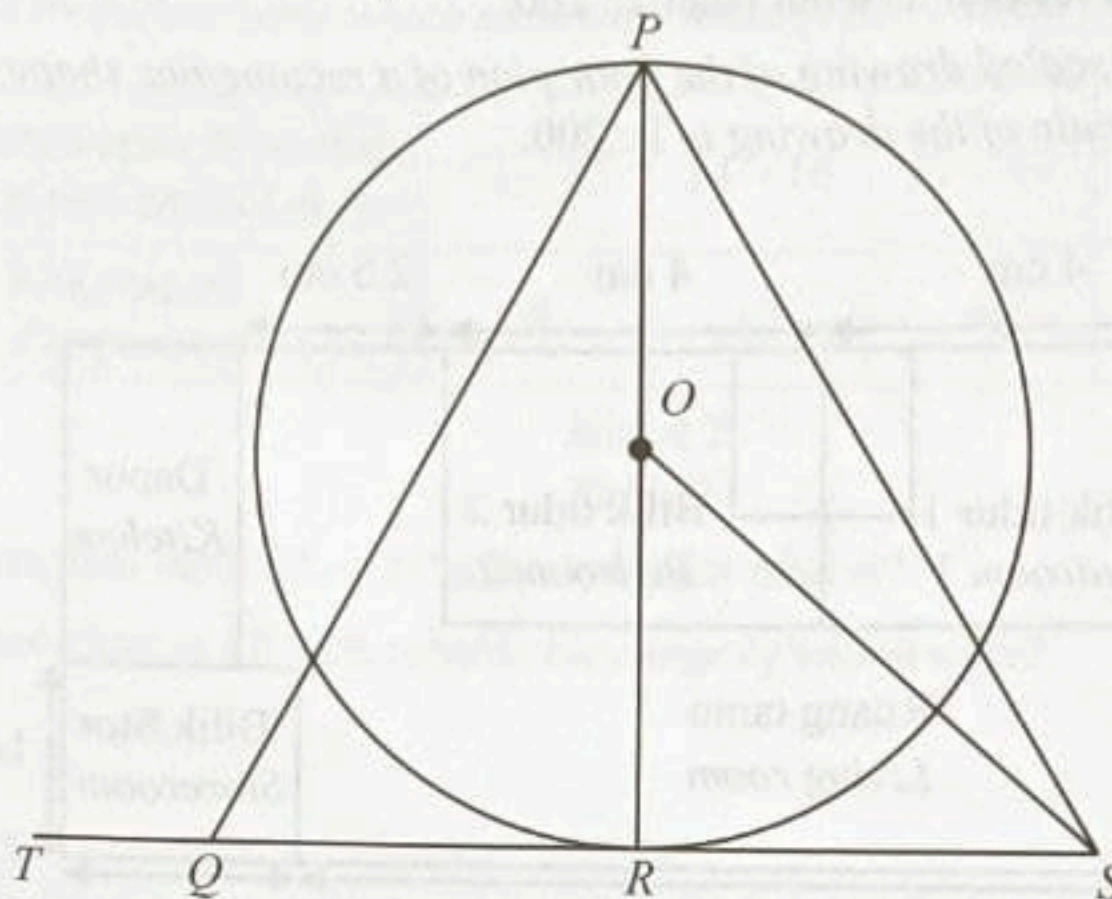
Kos memasang jubin lantai ialah RM150 satu meter persegi. Berapakah kos bagi memasang jubin lantai, dalam RM, di bahagian dapur itu?

*The cost of installing the floor tiles is RM150 per metre square. How much does it cost to install floor tiles, in RM, in the kitchen section?*

- A RM1 020
- B RM3 750
- C RM4 080
- D RM5 100



- 19 Dalam Rajah 10,  $TQRS$  ialah tangen kepada bulatan berpusat  $O$ , di titik  $R$ .  
*In Diagram 10,  $TQRS$  is a tangent to the circle with centre  $O$ , at point  $R$ .*



Rajah 10  
 Diagram 10

Diberi bahawa  $QR = RS$ , jejari bulatan ialah 6 cm dan luas  $\Delta PQS = 60 \text{ cm}^2$ .

Cari nilai bagi  $\cos \angle TQP + \tan \angle OSR$ .

*Given that  $QR = RS$ , radius of the circle is 6 cm and the area of  $\Delta PQS = 60 \text{ cm}^2$ .*

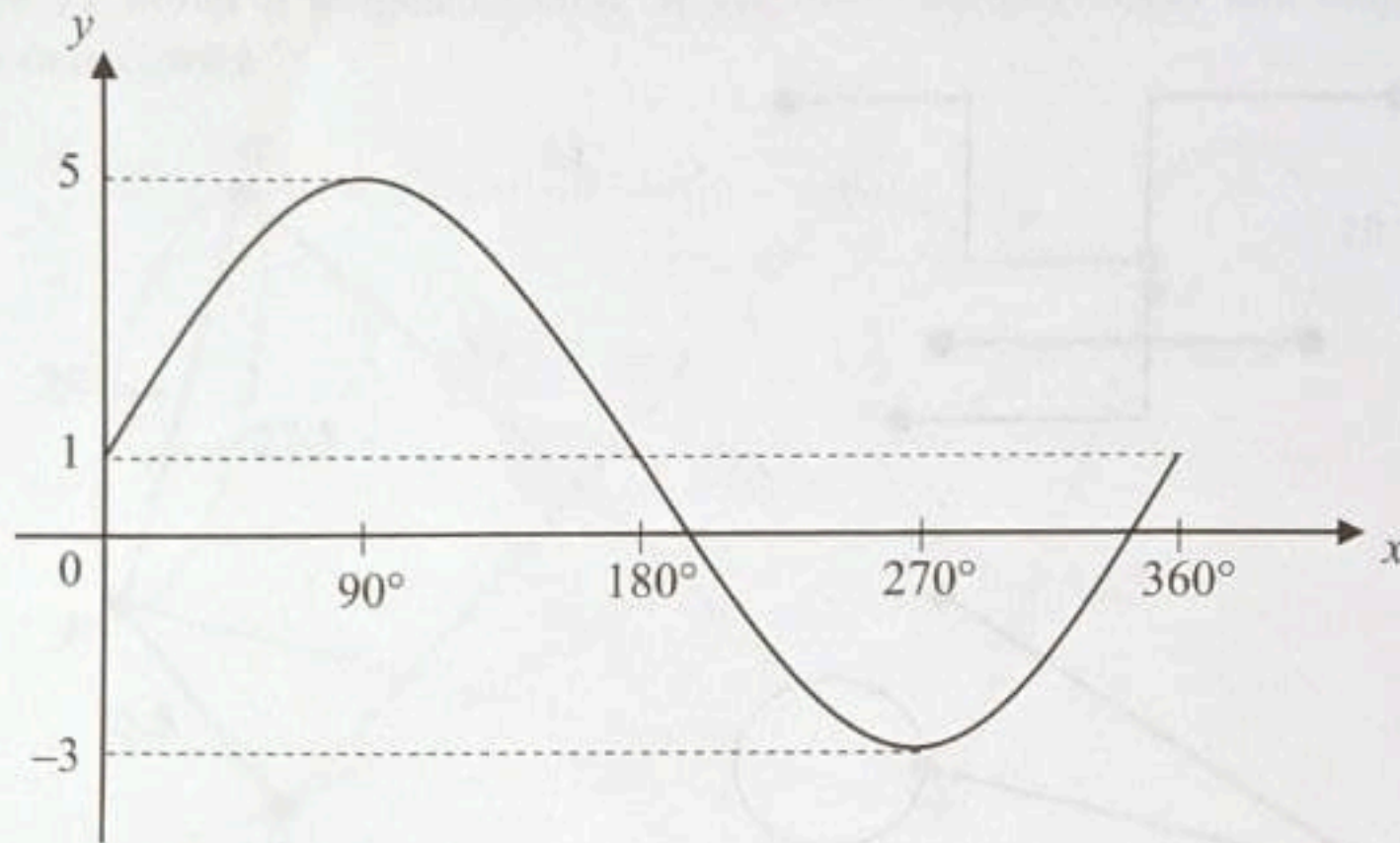
*Find the value of  $\cos \angle TQP + \tan \angle OSR$ .*

- A  $\frac{18}{65}$   
 B  $\frac{53}{65}$   
 C  $\frac{103}{65}$   
 D  $\frac{138}{65}$



- 20 Rajah 11 menunjukkan graf fungsi  $y = P \sin Qx + R$ .

Diagram 11 shows a graph of the function  $y = P \sin Qx + R$ .



Rajah 11  
Diagram 11

Cari nilai bagi  $P$ ,  $Q$  dan  $R$ .

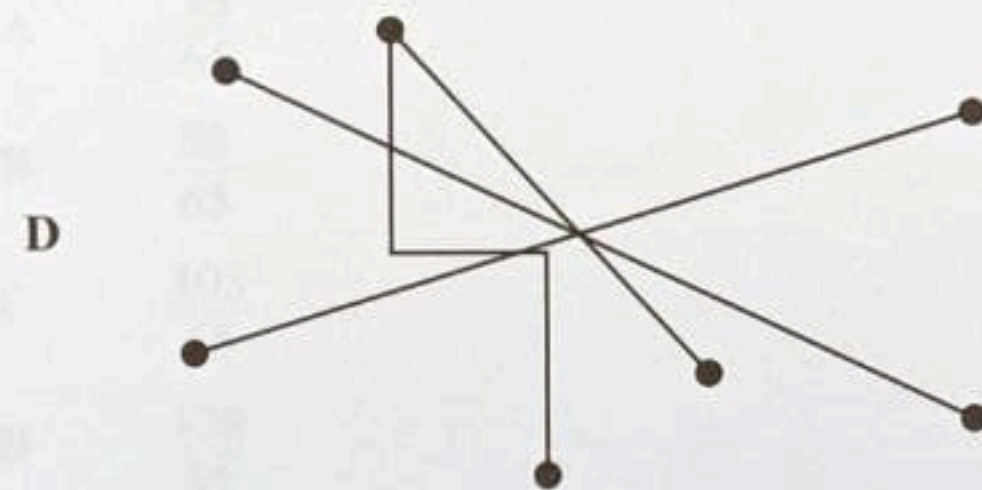
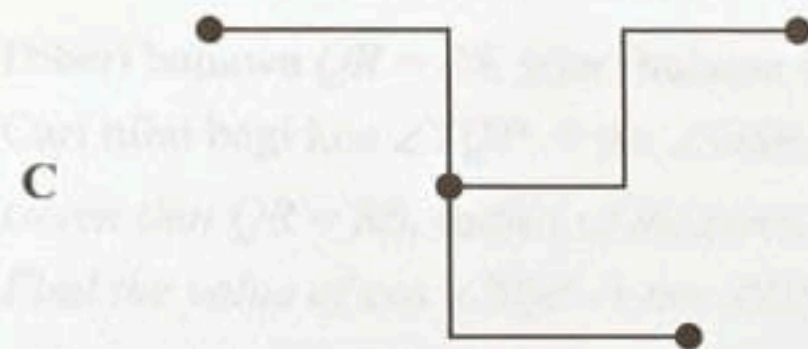
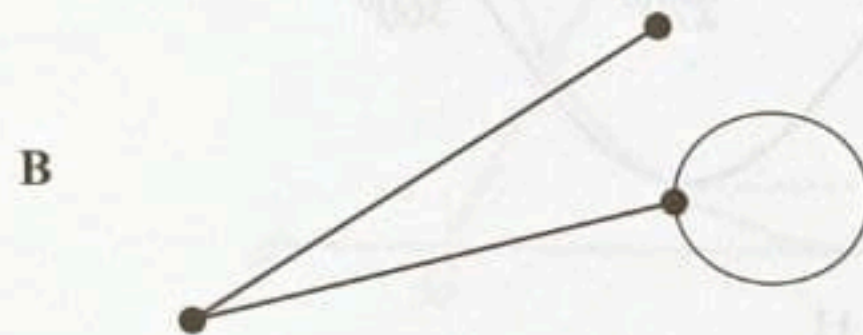
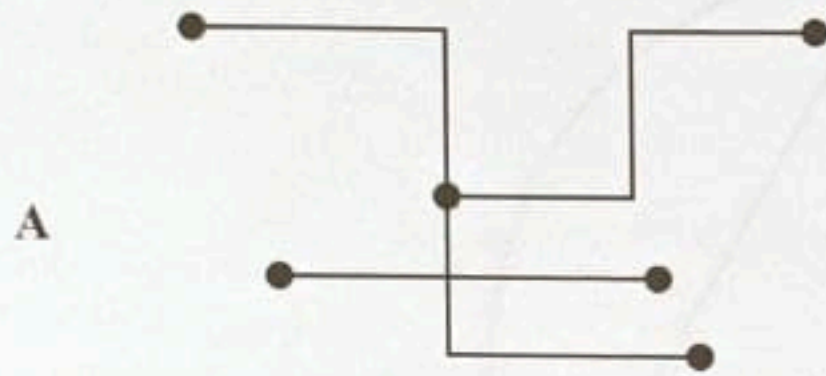
Find the values of  $P$ ,  $Q$  and  $R$ .

|   | $P$ | $Q$ | $R$ |
|---|-----|-----|-----|
| A | 1   | 1   | 1   |
| B | 1   | 1   | 0   |
| C | 4   | 1   | 0   |
| D | 4   | 1   | 1   |



21 Antara graf berikut, yang manakah adalah pokok?

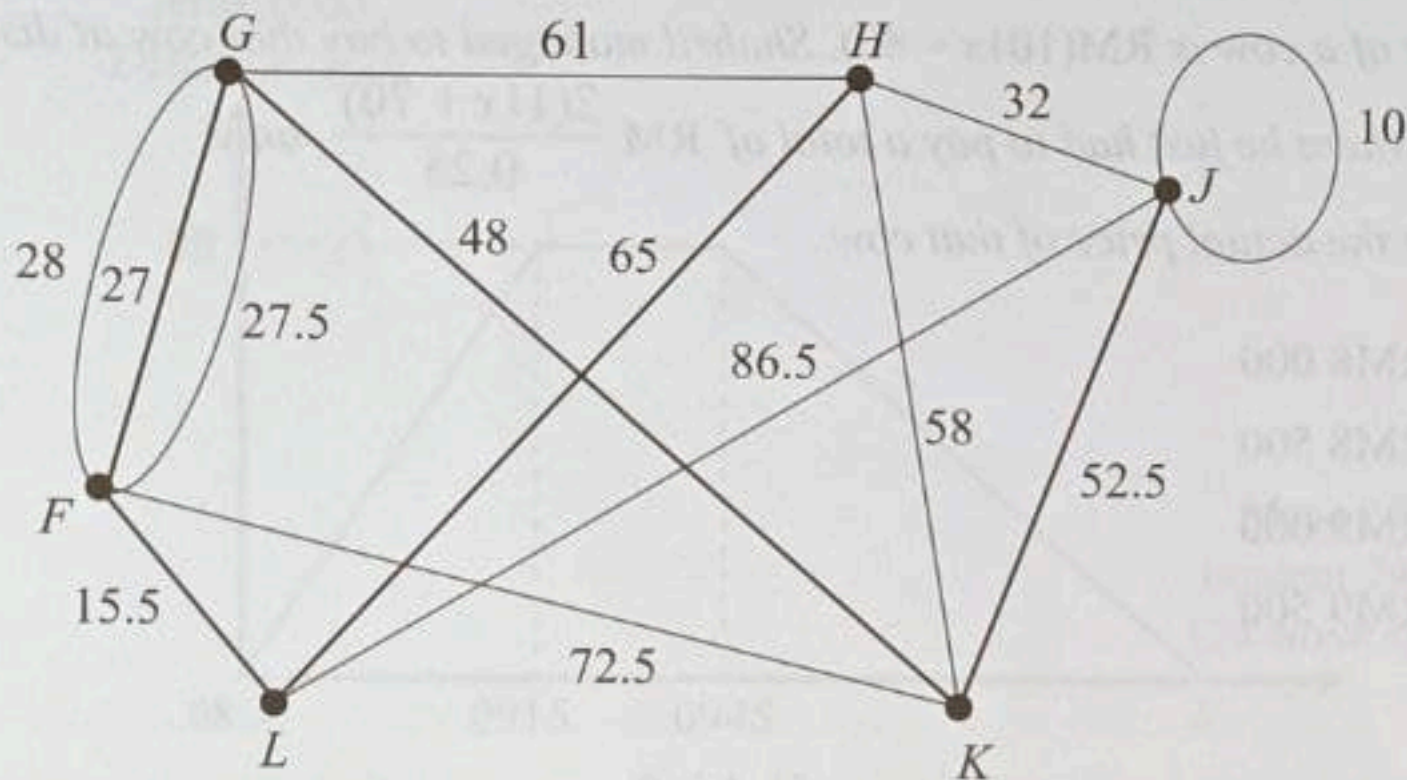
Which of the following graph is a tree?





- 22 Rajah 12 menunjukkan sebuah graf berpemberat, dalam km, dengan berbilang tepi dan bergelung yang menghubungkan enam buah kampung dalam sebuah daerah.

*Diagram 12 shows a weighted graph, in km, with multiple edges and loops connecting six villages in a district.*



Rajah 12  
Diagram 12

Zakiah dan Adriana bertolak dari kampung *F* untuk menghadiri satu mesyuarat di kampung *J*. Zakiah memilih jarak paling minimum dan memandu dengan kelajuan  $85 \text{ km h}^{-1}$  manakala Adriana perlu pergi ke kampung *G* terlebih dahulu sebelum ke kampung *J*. Mereka bertolak pada masa yang sama.

Hitung laju minimum Adriana jika mereka perlu berada di kampung *J* pada masa yang sama.

*Zakiah and Adriana depart from village *F* to attend a meeting at village *J*. Zakiah chooses the minimum distance and drives at the speed of  $85 \text{ km h}^{-1}$  while Adriana needs to go to village *G* first before heading to village *J*. They departed at the same time.*

*Calculate the minimum speed of Adriana if they need to be at village *J* at the same time.*

- A 100
- B 105
- C 110
- D 115



- 23 Harga bagi seekor lembu ialah  $\text{RM}(101x - 80)$ . Shahril dapat membeli lembu tersebut pada harga diskaun  $\text{RM}400$ , di mana dia hanya membayar sejumlah  $\text{RM} \frac{2(11x + 70)}{0.25}$  sahaja.

Hitung harga sebenar lembu itu.

*The price of a cow is  $\text{RM}(101x - 80)$ . Shahril managed to buy that cow at discounted price of  $\text{RM}400$ , where he just had to pay a total of  $\text{RM} \frac{2(11x + 70)}{0.25}$  only.*

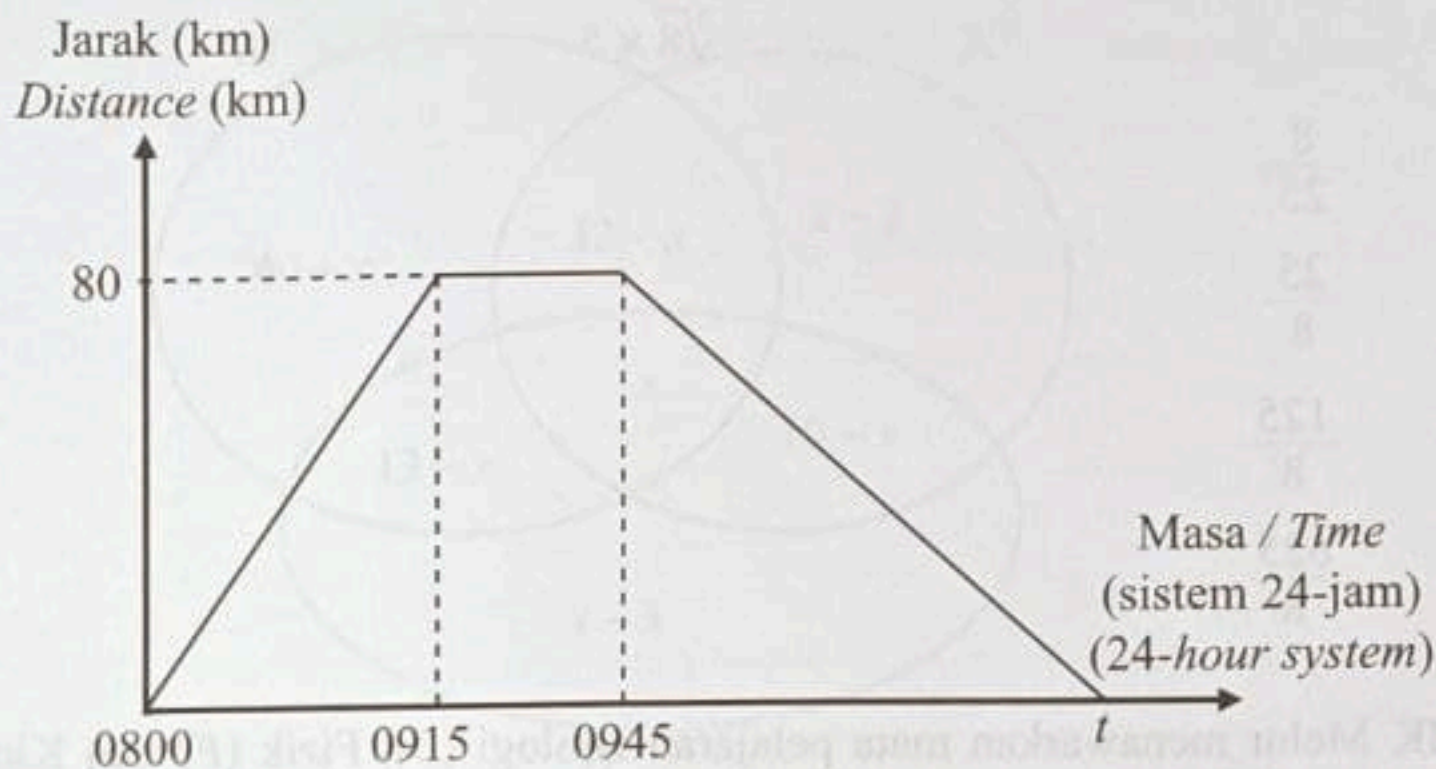
*Calculate the actual price of that cow.*

- A RM8 000
- B RM8 500
- C RM9 000
- D RM9 500



- 24 Graf jarak-masa di Rajah 13 menunjukkan perjalanan Catherina dari Bandar X ke Bandar Y dan kembali semula ke Bandar X.

*The distance-time graph in Diagram 13 shows Catherina's journey from Town X to Town Y and back again to Town X.*



Rajah 13  
Diagram 13

Diberi laju pemanduan pulang ke Bandar X adalah  $10\frac{2}{3}$  km j<sup>-1</sup> lebih perlahan daripada laju pemanduan dari Bandar X.

Hitung nilai  $t$ .

*Given the speed driven back to Town X is  $10\frac{2}{3}$  km h<sup>-1</sup> slower than the speed driven from Town X.*

*Calculate the value of  $t$ .*

- A 1035
- B 1051
- C 1100
- D 1115

- 25 Selesaikan:

*Solve:*

$$7 - 5w \leq 8 + w$$

- A  $w \geq -\frac{1}{6}$
- B  $w \geq -\frac{1}{4}$
- C  $w \leq \frac{1}{6}$
- D  $w \leq \frac{1}{4}$



- 26 Cari nilai bagi  
Find the value of

$$\frac{25^{\frac{3}{2}} \times 2^{-2}}{\sqrt[3]{8} \times 5}$$

A  $\frac{8}{25}$

B  $\frac{25}{8}$

C  $\frac{125}{8}$

D  $\frac{625}{8}$

- 27 SMK Melur menawarkan mata pelajaran Biologi (*B*), Fizik (*F*) dan Kimia (*K*) untuk murid Tingkatan 4. Jadual 3 menunjukkan bilangan murid yang mengambil mata pelajaran ini.

*SMK Melur offers Biology (B), Physics (F) and Chemistry (K) subjects to Form 4 pupils. Table 3 shows the number of pupils who took these subjects.*

| <i>B</i> | <i>F</i> | <i>K</i> | <i>F dan K</i><br><i>F and K</i> | <i>B dan F</i><br><i>B and F</i> | <i>B dan K</i><br><i>B and K</i> |
|----------|----------|----------|----------------------------------|----------------------------------|----------------------------------|
| 30       | 40       | 60       | 15                               | 10                               | 5                                |

Jadual 3

Table 3

Cari bilangan murid yang mengambil sekurang-kurangnya satu mata pelajaran yang ditawarkan.

*Find the number of pupils who took at least one of the subjects offered.*

A 30

B 60

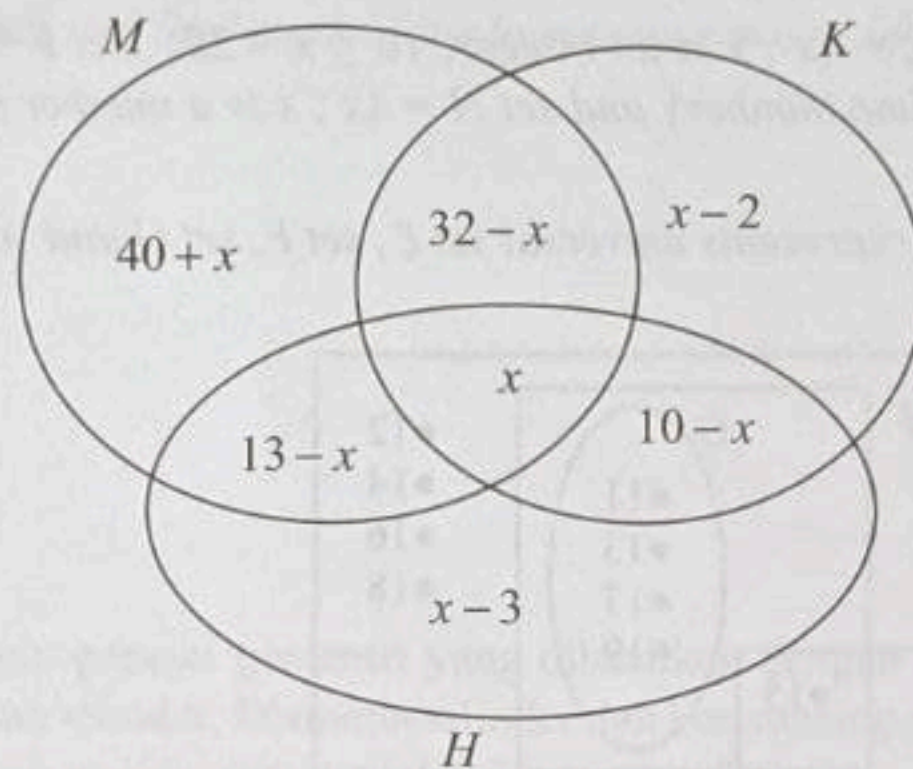
C 70

D 100



- 28 Gambar rajah Venn di Rajah 14 menunjukkan peratus murid yang menggemari warna merah ( $M$ ), kuning ( $K$ ) dan hijau ( $H$ ).

*The Venn diagram in Diagram 14 shows the percentage of pupils who like red ( $M$ ), yellow ( $K$ ) and green ( $H$ ) colour.*



Rajah 14  
Diagram 14

Cari peratus murid yang menggemari ketiga-tiga warna.

*Find the percentage of pupils who like three colours.*

- A 10
- B 20
- C 30
- D 40

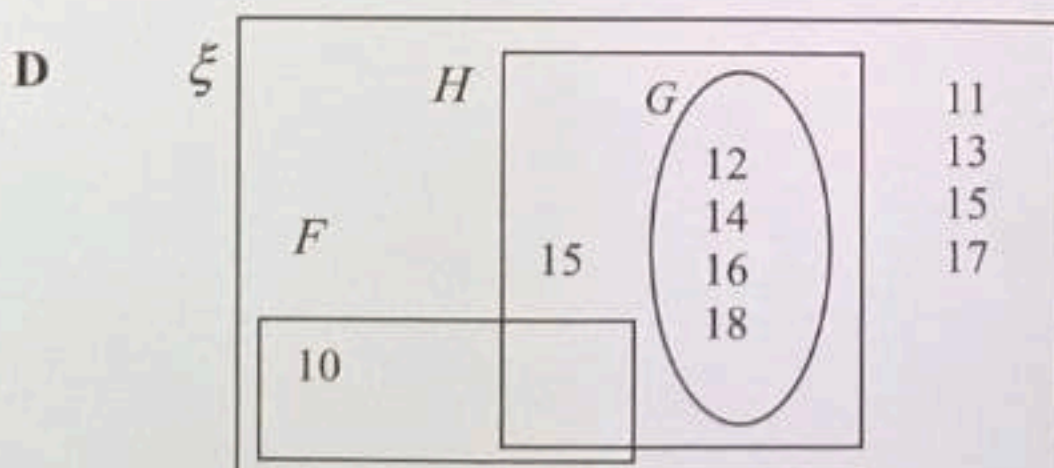
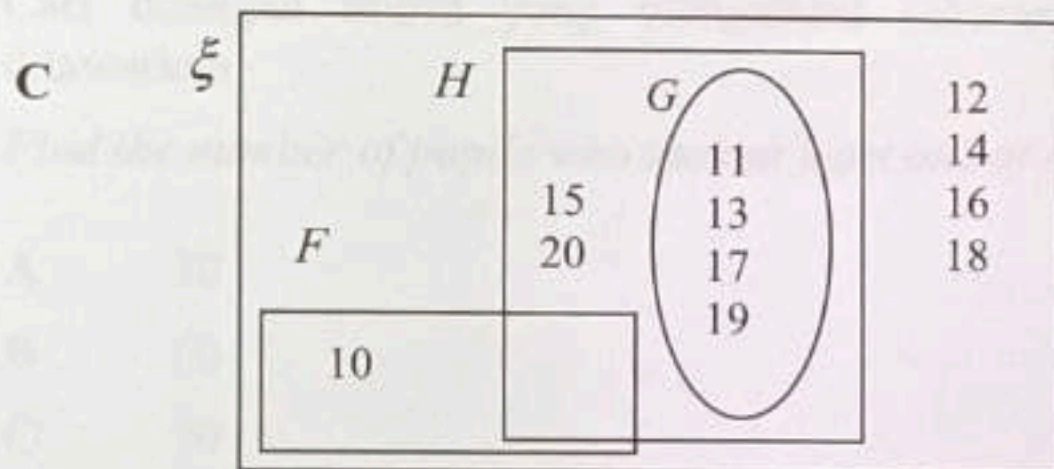
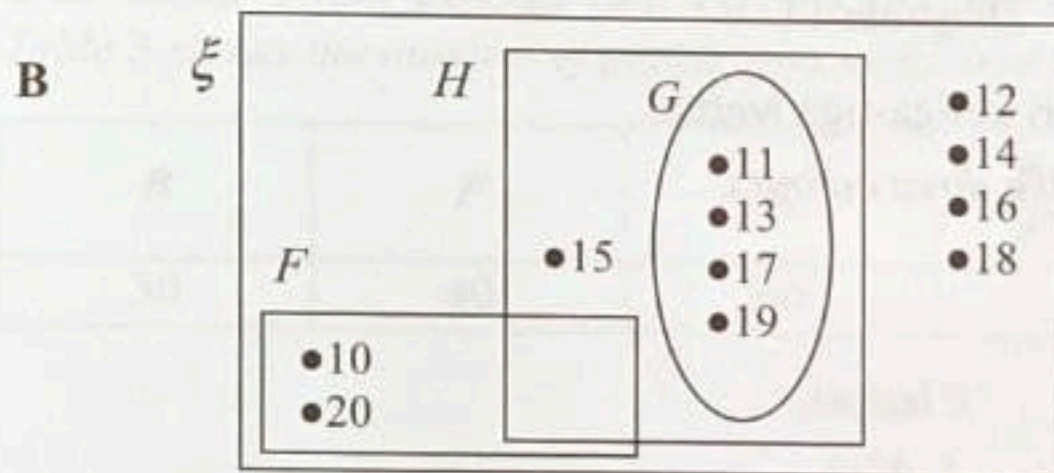
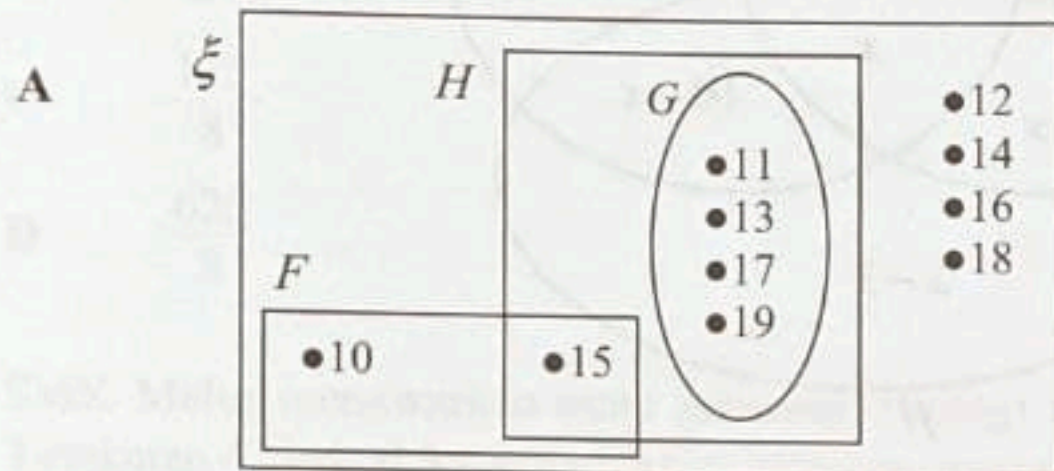


- 29 Diberi set semesta  $\xi = \{x : x \text{ ialah integer, } 10 \leq x < 20\}$ , set  $F = \{x : x \text{ ialah gandaan } 5\}$ , set  $G = \{x : x \text{ ialah nombor perdana}\}$  dan set  $H = \{x : x \text{ ialah hasil tambah dua digit adalah genap}\}$ .

Gambar rajah Venn yang manakah mewakili set semesta  $\xi$ , set  $F$ , set  $G$  dan set  $H$ ?

Given universal set,  $\xi = \{x : x \text{ is an integer, } 10 \leq x < 20\}$ , set  $F = \{x : x \text{ is a multiple of } 5\}$ , set  $G = \{x : x \text{ is a prime number}\}$  and set  $H = \{x : x \text{ is a number such that the sum of its two digits is even}\}$ .

Which Venn diagram represents universal set  $\xi$ , set  $F$ , set  $G$  and set  $H$ ?





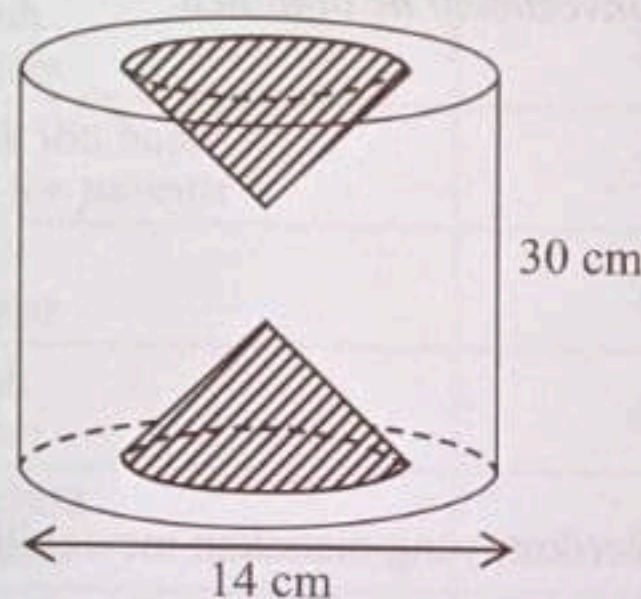
- 30 Diberi tinggi sebuah segi tiga bersudut tegak adalah 5 cm lebih pendek daripada panjang tapaknya. Jika luas segi tiga tersebut ialah  $52 \text{ cm}^2$ , cari panjang hipotenus, dalam cm, segi tiga tersebut.

*Given the height of a right-angled triangle is 5 cm shorter than the length of its base. If the area of a triangle is  $52 \text{ cm}^2$ , find the length of the hypotenuse in cm, of the triangle.*

- A  $\sqrt{23}$   
 B  $\sqrt{31}$   
 C  $\sqrt{233}$   
 D  $\sqrt{493}$

- 31 Rajah 15 menunjukkan pepejal geometri yang dihasilkan dengan mengeluarkan dua kon yang sama tinggi dari sebuah silinder. Diameter silinder dan kon masing-masing ialah 14 cm dan 7 cm. Tinggi silinder dan kon masing-masing ialah 30 cm dan 9 cm.

*Diagram 15 shows a solid geometry produced by removing two cones of equal height from a cylinder. Diameter of the cylinder and the cones are 14 cm and 7 cm respectively. The height of the cylinder and the cones are 30 cm and 9 cm respectively.*



Rajah 15  
 Diagram 15

Menggunakan  $\pi = \frac{22}{7}$ , hitung isi padu, dalam  $\text{cm}^3$ , pepejal yang tinggal.

*Using  $\pi = \frac{22}{7}$ , calculate the volume, in  $\text{cm}^3$ , of the remaining solid.*

- A 3 696.00  
 B 3 927.00  
 C 4 389.00  
 D 4 504.50



- 32 Jadual 4 menunjukkan pelaburan Encik Faiz sebanyak 3 500 unit dalam Saham *PQR* pada 1 Januari 2018. Dividen pada tahun kewangan berakhir 31 Disember 2018 ialah 4.8 %.

*Table 4 shows Encik Faiz's investment of 3 500 units in Saham PQR on 1 January 2018. Dividend for the financial year ending 31 December 2018 is 4.8 %.*

|                                                                                                                                |            |
|--------------------------------------------------------------------------------------------------------------------------------|------------|
| <b>Modal awal pada 1 Januari 2018</b><br><i>Initial capital on January 1, 2018</i>                                             | 3 500 unit |
| <b>RM per unit pada tahun 2018</b><br><i>RM per unit in year 2018</i>                                                          | 2.50       |
| <b>Dividen pada tahun kewangan berakhir 31 Disember 2018</b><br><i>Dividends for the financial year ended 31 December 2018</i> | 4.8 %      |

Jadual 4

Table 4

Pada 1 Januari 2019, Encik Faiz menjual semua saham yang dimiliki dengan harga RM2.80 seunit.

Hitung nilai pulangan pelaburan yang diperolehnya.

*On 1 January 2019, Encik Faiz sold all the shares he owned at RM2.80 per unit.*

*Calculate the return on investment he obtained.*

- A 15.0 %
- B 16.8 %
- C 17.4 %
- D 44.8 %

- 33 Antara hubungan yang berikut, yang manakah mewakili  $p \propto \frac{q}{\sqrt[3]{r}}$  ?

*Which of the following relation represents  $p \propto \frac{q}{\sqrt[3]{r}}$  ?*

- A  $p$  berubah secara langsung dengan  $q$  dan kuasa tiga  $r$ .  
 *$p$  varies directly as  $q$  and the cube of  $r$ .*
- B  $p$  berubah secara langsung dengan  $q$  dan punca kuasa tiga  $r$ .  
 *$p$  varies directly as  $q$  and the cube root of  $r$ .*
- C  $p$  berubah secara langsung dengan  $q$  dan secara songsang dengan kuasa tiga  $r$ .  
 *$p$  varies directly as  $q$  and inversely as the cube of  $r$ .*
- D  $p$  berubah secara langsung dengan  $q$  dan secara songsang dengan punca kuasa tiga  $r$ .  
 *$p$  varies directly as  $q$  and inversely as the cube root of  $r$ .*



- 34 Diberi  $p \propto q$  dan  $q = 2r + 1$ .  
Jika  $p = 25$  apabila  $r = 2$ , ungkapkan  $p$  dalam sebutan  $q$ .

*Given  $p \propto q$  and  $q = 2r + 1$ .*

*If  $p = 25$  when  $r = 2$ , express  $p$  in terms of  $q$ .*

- A  $p = 5q$
- B  $p = 15q$
- C  $p = 20q$
- D  $p = 75q$

- 35 Jadual 5 menunjukkan pendapatan dan perbelanjaan bulanan Puan Nabila.

*Table 5 shows an income and monthly expenses of Puan Nabila.*

| Perincian<br><i>Detail</i>                           | RM    |
|------------------------------------------------------|-------|
| Pendapatan aktif<br><i>Active income</i>             | 2 500 |
| Pendapatan pasif<br><i>Passive income</i>            | -     |
| Utiliti rumah<br><i>Home utilities</i>               | 250   |
| Elaun untuk ibu bapa<br><i>Allowance for parents</i> | 300   |
| Bayaran tol<br><i>Toll payments</i>                  | 250   |
| Sewa rumah<br><i>House rental</i>                    | 850   |
| Ansuran kereta<br><i>Car installment</i>             | 650   |
| Belanja petrol<br><i>Petrol expenses</i>             | 300   |
| Barangan dapur<br><i>Groceries</i>                   | 350   |

Jadual 5

Table 5

Berapakah pendapatan pasif Puan Nabila supaya aliran tunai dalam bulan itu adalah positif?

*How much is Puan Nabila's passive income so that the cash flow in the month is positive?*

- A RM350
- B RM400
- C RM450
- D RM600



- 36 Diberi persamaan matriks  $3(q \ 1) - p(2 \ 3) = (7 \ 18)$ , hitung  $p - q$ .

*Given the matrix equation  $3(q \ 1) - p(2 \ 3) = (7 \ 18)$ , calculate  $p - q$ .*

- A -4  
B -2  
C 0  
D 2

- 37 Diberi bahawa matriks  $N = \begin{pmatrix} 3 & m \\ -7 & 7 \end{pmatrix}$ .

Jika matriks  $N$  tidak mempunyai matriks songsang, cari nilai  $m$ .

*It is given that matrix  $N = \begin{pmatrix} 3 & m \\ -7 & 7 \end{pmatrix}$ .*

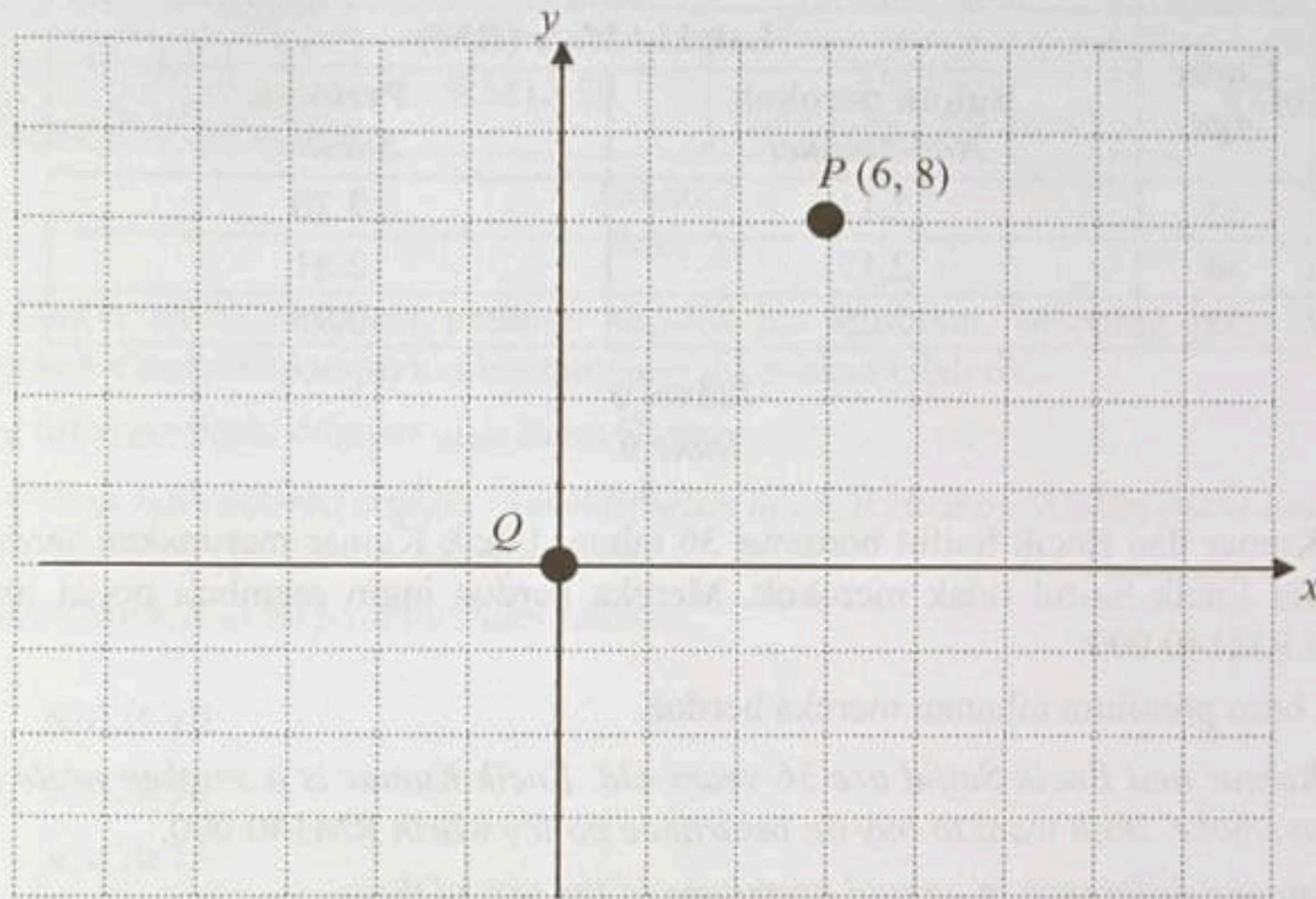
*If matrix  $N$  does not have inverse matrix, find the value of  $m$ .*

- A -4  
B -3  
C 3  
D 4



- 38 Dalam Rajah 16,  $Q$  ialah imej bagi  $P$  di bawah translasi  $\begin{pmatrix} e \\ f \end{pmatrix}$ . Jarak  $PQ$  ialah 10 unit.

*In Diagram 16,  $Q$  is the image of  $P$  under a translation  $\begin{pmatrix} e \\ f \end{pmatrix}$ . The distance of  $PQ$  is 10 units.*



Rajah 16  
Diagram 16

Translasi  $\begin{pmatrix} e \\ f \end{pmatrix}$  ialah

*The translation  $\begin{pmatrix} e \\ f \end{pmatrix}$  is*

- A  $\begin{pmatrix} -6 \\ 8 \end{pmatrix}$
- B  $\begin{pmatrix} 6 \\ -8 \end{pmatrix}$
- C  $\begin{pmatrix} 8 \\ -6 \end{pmatrix}$
- D  $\begin{pmatrix} -6 \\ -8 \end{pmatrix}$



- 39 Jadual 6 menunjukkan kadar premium tahunan bagi setiap RM1 000 nilai muka insurans tahunan diperbaharui yang ditawarkan oleh Syarikat Insurans Tekun.

*Table 6 shows the annual premium rate per RM1 000 face value of a yearly renewable term insurans offered by Syarikat Insurans Tekun.*

| Umur<br><i>Age</i> | Lelaki / Male (RM)                 |                          |
|--------------------|------------------------------------|--------------------------|
|                    | Bukan perokok<br><i>Non-smoker</i> | Perokok<br><i>Smoker</i> |
| 35                 | 2.11                               | 2.70                     |
| 36                 | 2.17                               | 2.81                     |
| 37                 | 2.25                               | 2.95                     |

Jadual 6  
Table 6

Encik Kumar dan Encik Saiful berumur 36 tahun. Encik Kumar merupakan seorang perokok manakala Encik Saiful tidak merokok. Mereka berdua ingin membeli polisi insurans yang bernilai RM140 000.

Hitung beza premium tahunan mereka berdua.

*Encik Kumar and Encik Saiful are 36 years old. Encik Kumar is a smoker while Encik Saiful does not smoke. Both want to buy an insurance policy worth RM140 000.*

*Calculate the difference in annual premiums of the two of them.*

- A RM82.60
- B RM89.60
- C RM108.00
- D RM109.20



- 40 Jadual 7 menunjukkan harga makanan dan minuman di sebuah restoran.  
*Table 7 shows the prices of food and beverage in a restaurant.*

| <b>Makanan<br/>dan Minuman</b><br><i>Food and Beverage</i> | Piza Ayam<br><i>Chicken Pizza</i> | Kek Vanila<br><i>Vanilla Cake</i>        | Jus Tembikai<br><i>Watermelon Juice</i> |
|------------------------------------------------------------|-----------------------------------|------------------------------------------|-----------------------------------------|
| <b>Harga</b><br><i>Price</i>                               | RM12.50                           | RM4.20<br>(sepotong / <i>per slice</i> ) | RM6.60                                  |

Jadual 7

Table 7

Puan Gloria telah membuat pesanan segelas jus tembikai, sekeping piza ayam dan dua potong kek vanila. Cukai perkhidmatan yang dikenakan ialah 6%.

Hitung bil yang perlu dibayar oleh Puan Gloria.

*Puan Gloria has ordered a glass of watermelon juice, a slice of chicken pizza and two slices of vanilla cake. The service tax charge is 6%.*

*Calculate the bill to be paid by Puan Gloria.*

- A RM25.10
- B RM28.90
- C RM29.15
- D RM31.70

**KERTAS PEPERIKSAAN TAMAT**  
**END OF QUESTION PAPER**





**MODUL PINTAS  
TINGKATAN 5**

**1449/1**

**MATEMATIK  
Kertas 1**

$1\frac{1}{2}$  jam

Satu jam tiga puluh minit

---

**SKEMA JAWAPAN  
MATEMATIK K1  
1449/1**



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

|           |          |           |          |
|-----------|----------|-----------|----------|
| <b>A</b>  | <b>B</b> | <b>C</b>  | <b>D</b> |
| <b>12</b> | <b>9</b> | <b>10</b> | <b>9</b> |



1449/2

# MATEMATIK

## Kertas 2

1. **Jangan Buka Kertas Peperiksaan Ini Sehingga Diberitahu.**
2. Tulis **nombor kad pengenalan, angka giliran, nama, tingkatan** anda pada petak yang disediakan.
3. Kertas peperiksaan ini adalah dalam dwibahasa.
4. Soalan dalam bahasa Melayu mendahului soalan yang sepadan dalam bahasa Inggeris.
5. Calon dibenarkan menjawab keseluruhan atau sebahagian soalan sama ada dalam bahasa Melayu atau bahasa Inggeris.
6. Calon dikehendaki membaca maklumat di halaman belakang kertas peperiksaan ini.

| Kegunaan Pemeriksaan |        |              |                  |
|----------------------|--------|--------------|------------------|
| Kod Pemeriksa :      |        |              |                  |
| Bahagian             | Soalan | Markah Penuh | Markah Diperoleh |
| A                    | 1      | 4            |                  |
|                      | 2      | 4            |                  |
|                      | 3      | 5            |                  |
|                      | 4      | 4            |                  |
|                      | 5      | 3            |                  |
|                      | 6      | 4            |                  |
|                      | 7      | 4            |                  |
|                      | 8      | 4            |                  |
|                      | 9      | 4            |                  |
|                      | 10     | 4            |                  |
| B                    | 11     | 9            |                  |
|                      | 12     | 6            |                  |
|                      | 13     | 10           |                  |
|                      | 14     | 8            |                  |
|                      | 15     | 12           |                  |
| C                    | 16     | 15           |                  |
|                      | 17     | 15           |                  |
| Jumlah               |        |              |                  |

|  |  |  |  |  |   |  |  |   |  |  |  |  |
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TINGKATAN : .....

[ Lihat halaman sebelah



**Bahagian A**  
**Section A**

[40 markah]

[40 marks]

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

- 1 Selesaikan persamaan kuadratik berikut.

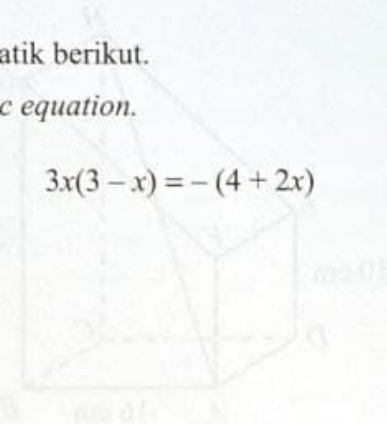
*Solve the following quadratic equation.*

$$3x(3 - x) = -(4 + 2x)$$

[4 markah]

[4 marks]

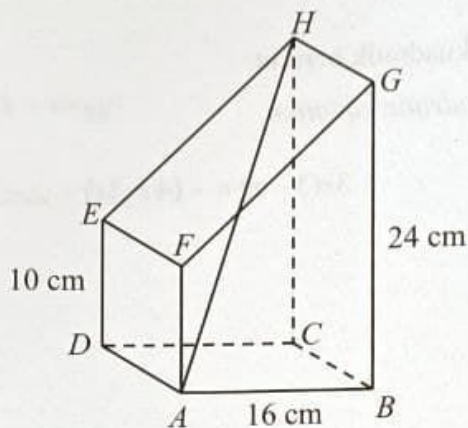
Jawapan / Answer :





- 2 Rajah 1 menunjukkan sebuah pepejal berbentuk prisma dengan tapak segi empat tepat  $ABCD$  terletak di atas satah mengufuk. Permukaan  $ABGF$  ialah keratan rentas seragam prisma itu.  $ADEF$  ialah segi empat sama.

*Diagram 1 shows a prism-shaped solid with a rectangular base  $ABCD$  lying on the horizontal plane. The surface  $ABGF$  is the uniform cross-section of the prism.  $ADEF$  is a square.*



Rajah 1  
Diagram 1

Hitung sudut di antara satah  $ABCD$  dan garis  $AH$ .

*Calculate the angle between the plane  $ABCD$  and the line  $AH$ .*

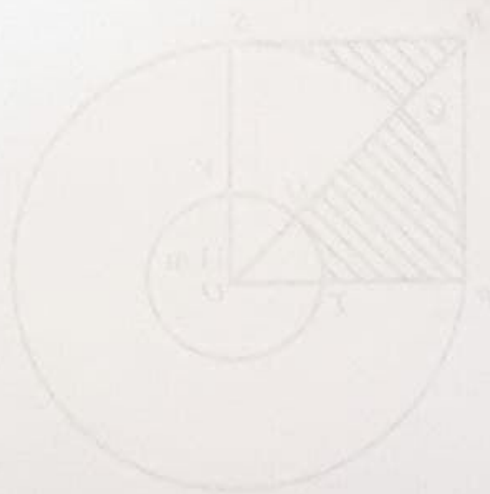
[4 markah]

[4 marks]

Jawapan / Answer :



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Rajah 2  
(Figure 2)

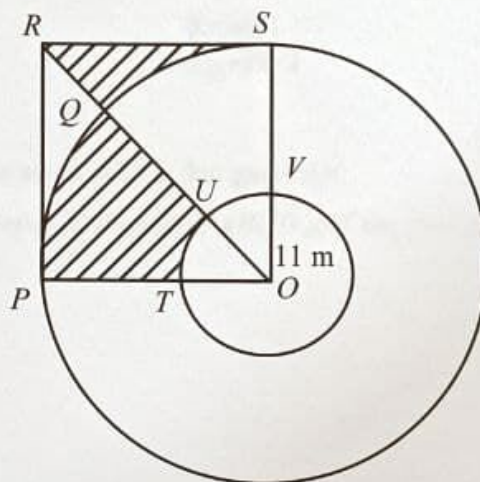


- 3 (a) Diana menggunakan 1.26 m reben berwarna merah untuk dilekat mengelilingi kad bod berbentuk bulat.  
Hitung jejari, dalam m, kad bod itu.  
(Guna  $\pi = 3.142$ )
- Diana uses 1.26 m of red ribbon to stick around a circular shaped cardboard.  
Calculate the radius, in m, of the cardboard.  
(Use  $\pi = 3.142$ )*

[2 markah]

[2 marks]

- (b) Diana mendapati tapak taman rekreasi yang dibina berhampiran rumahnya itu berbentuk bulat dan berpusat  $O$ . Terdapat garisan berbentuk segi empat sama berukuran 30 m panjang dicat atas kawasan rekreasi seperti dalam Rajah 2. Kawasan berlorek dalam Rajah 2 adalah berjubin. Jejari bulatan kecil ialah 11 m.
- Diana noticed that the site of a recreational park built near her house is round in shape and has a centre,  $O$ . There is a square shaped line measuring 30 m of length painted on the recreation area as shown in Diagram 2. The shaded area in Diagram 2 is tiled. Radius of the smaller circle is 11 m.*



Rajah 2  
Diagram 2

Hitung luas kawasan berjubin. (Guna  $\pi = 3.142$ )  
Nyatakan jawapan anda betul kepada dua tempat perpuluhan.  
*Calculate the tiled area. (Use  $\pi = 3.142$ )  
State your answer correct to two decimal places.*

[3 markah]

[3 marks]



Jawapan / Answer :

(a)

(b)



- 4 (a) Lengkapkan pernyataan berikut dengan menggunakan pengkuantiti yang sesuai untuk membentuk satu pernyataan yang benar.

*Complete the following statements by using a proper quantifier to form a true statement.*

- (i) ..... bendera negeri di Malaysia mempunyai warna merah.  
..... *state flags in Malaysia has red colour.*
- (ii) ..... poligon mempunyai bilangan paksi yang sama dengan bilangan sisi.  
..... *polygons have equal number of axis as the number of sides.*

[2 markah]

[2 marks]

- (b) Tulis Premis 2 untuk melengkapkan hujah berikut:

*Write down Premise 2 to complete the following argument:*

Premis 1 : Jika  $n$  ialah nombor kuasa dua sempurna, maka punca kuasa dua  $n$  ialah suatu integer.

*Premise 1 : If  $n$  is a perfect square, then square root of  $n$  is an integer.*

Premis 2 : .....

*Premise 2 : .....*

Kesimpulan : Punca kuasa dua 81 ialah suatu integer.

*Conclusion : Square root of 81 is an integer.*

[1 markah]

[1 mark]

- (c) Tuliskan akas bagi implikasi yang berikut.

*Write down the converse of the following implication.*

Jika  $\triangle PQR$  ialah sebuah segi tiga sama sisi, maka nilai bagi setiap sudut pedalamannya ialah  $60^\circ$ .

*If  $\triangle PQR$  is an equilateral triangle, then the value of each interior angle is  $60^\circ$ .*

[1 markah]

[1 mark]



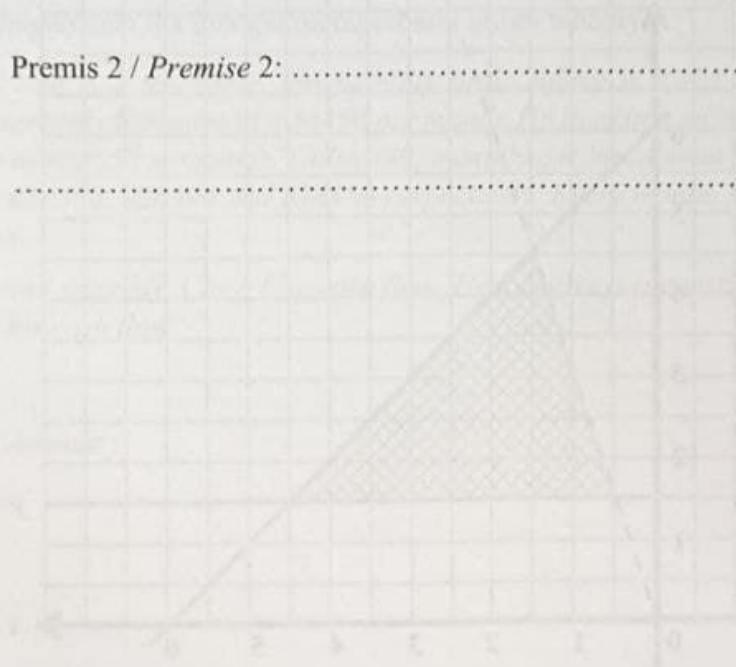
Jawapan / Answer :

(a) (i) .....

(ii) .....

(b) Premis 2 / Premise 2: .....

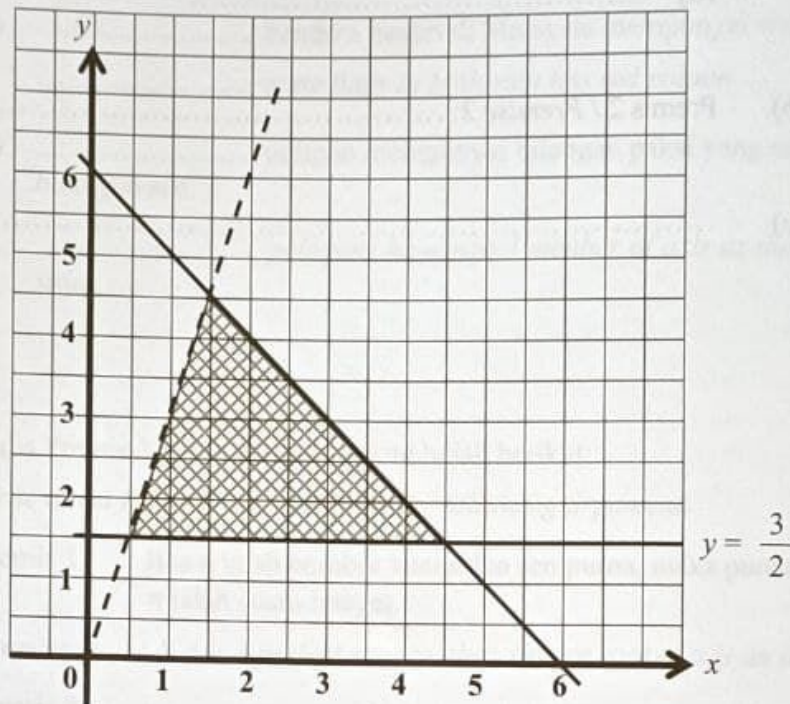
(c) .....





- 5 Rajah 3 menunjukkan rantau berlorek yang memuaskan tiga ketaksamaan. Nyatakan semua ketaksamaan itu.

Diagram 3 shows a shaded region which satisfies three inequalities. State all the inequalities.



Rajah 3  
Diagram 3

[3 markah]

[3 marks]

Jawapan / Answer :



- 6 Encik Chew Eng merupakan seorang mekanik. Gaji pokok bulanannya ialah RM1 400. Dia menerima elaun lebih masa bulanan sebanyak RM450 sebulan. Dia tinggal di sebuah rumah teres dengan kadar sewa RM550 sebulan. Bil utiliti, ansuran bulanan kereta dan kos petrolnya masing-masing adalah RM350, RM390 dan RM180. Setiap bulan, dia membelanjakan RM750 untuk makanannya.

Hitung dan nyatakan bentuk aliran tunai Encik Chew Eng. Seterusnya, beri satu cadangan bagaimana dia mampu memperbaiki aliran tunainya.

*Mr. Chew Eng is a mechanic. His monthly basic salary is RM 1 400. He received monthly overtime allowance of RM450 per month. He lives in a terrace house with the rental rate of RM550 per month. Utility bill, monthly car installment and the cost of his petrol are RM350, RM390 and RM180 respectively. Every month, he spends RM750 for his food.*

*Calculate and state Mr. Chew Eng cash flow. Hence, give a suggestion on how he can improvise his cash flow.*

[4 markah]

[4 marks]

Jawapan / Answer :



- 7 Untuk soalan ini, beri semua jawapan anda dalam bentuk pecahan.

*For this question, give all your answers as fractions.*

Apabila Ivan pergi ke pusat membeli-belah, kebarangkalian dia memakai topi ialah  $\frac{5}{8}$ .

Jika dia memakai topi, maka kebarangkalian dia memakai kasut sukan ialah  $\frac{2}{3}$ .

Jika dia tidak memakai topi, maka kebarangkalian dia memakai kasut sukan ialah  $\frac{1}{6}$ .

*When Ivan goes to shopping mall, the probability that he wears a hat is  $\frac{5}{8}$ .*

*If he wears a hat, then the probability that he wears a sport shoes is  $\frac{2}{3}$ .*

*If he does not wear a hat, then the probability that he wears a sport shoes is  $\frac{1}{6}$ .*

- (a) Rajah 4 di ruang jawapan menunjukkan semua kesudahan yang mungkin. Lengkapkan gambar rajah pokok di Rajah 4.

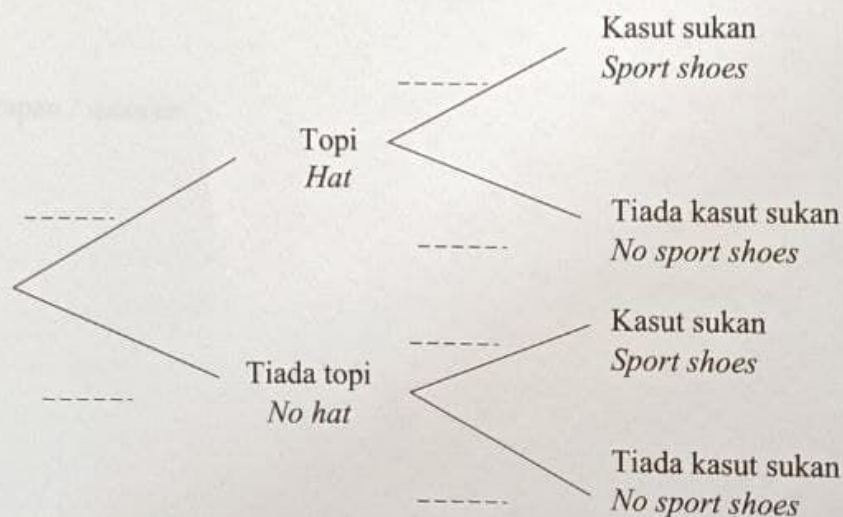
*Diagram 4 in the answer space shows all the possible outcomes.*

*Complete the tree diagram in Diagram 4.*

[2 markah]

[2 marks]

Jawapan / Answer :



Rajah 4  
Diagram 4



- (b) Seterusnya, cari kebarangkalian bahawa Ivan memakai topi atau kasut sukan tetapi bukan kedua-duanya.

*Hence, find the probability that Ivan wears a hat or sport shoes but not both.*

[2 markah]

[2 marks]

Jawapan / Answer :



- 8 Firdaus berlatih untuk menyertai perlumbaan maraton. Dia berlatih mengikut rutin untuk berlari sejauh 32 km seminggu. Dia bercadang untuk menambahkan jarak larian  $D(x)$ , dalam km, setiap minggu sebanyak 10% daripada jarak larian pada minggu sebelumnya, dengan keadaan  $x$  mewakili bilangan minggu latihan.

Terbitkan satu model matematik bagi jarak lariannya,  $D(x)$  melalui pemodelan matematik.

*Firdaus is training for a marathon. He practises according to his routine which is running as far as 32 km a week. He plans to increase his running distance,  $D(x)$ , in km, each week by 10% of his running distance in the previous week, where  $x$  represents number of weeks of training.*

*Derive a mathematical model for his running distance,  $D(x)$  through mathematical modeling.*

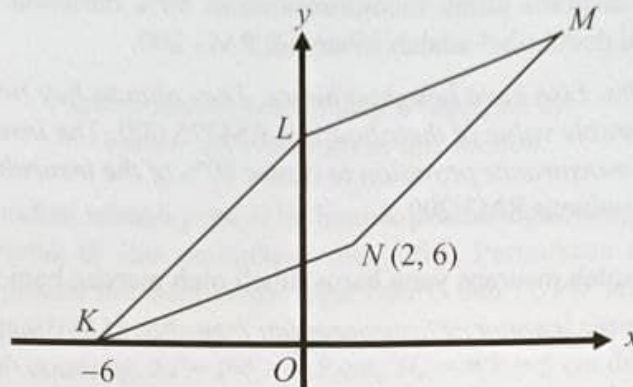
[4 markah]

[4 marks]

Jawapan / Answer :



- 9 Rajah 5 menunjukkan sebuah rombus  $KLMN$ .  
Diagram 5 shows a rhombus  $KLMN$ .



Rajah 5  
Diagram 5

Diberi bahawa  $KN = 10$  unit.

Given that  $KN = 10$  units.

Cari

Find

- kecerunan garis lurus  $LM$ ,  
gradient of straight line  $LM$ ,
- persamaan garis lurus  $MN$ .  
the equation of the straight line  $MN$ .

[4 markah]

[4 marks]

Jawapan / Answer :

(a)

(b)



- 10 Encik Eric dan Puan Lisa telah membeli sebuah rumah. Mereka bercadang untuk membeli insurans kebakaran untuk rumah mereka. Nilai boleh insurans bagi rumah mereka ialah RM375 000. Polisi insurans yang dipilih oleh mereka mempunyai peruntukan ko-insurans untuk menginsuranskan 80% daripada nilai boleh insurans rumahnya. Nilai deduktibel adalah sebanyak RM3 200.

*Mr. Eric and Mrs. Lisa have bought a house. They plan to buy fire insurance for their house. The insurable value of their house is RM375 000. The insurance policy chosen by them has a co-insurance provision to insure 80% of the insurable value of his home. The deductible value is RM3 200.*

- (a) Hitung jumlah insurans yang harus dibeli oleh mereka bagi rumah mereka itu.  
*Calculate the amount of insurance that they should buy for their house.*
- (b) Satu kebakaran kecil telah berlaku di rumah mereka yang mengakibatkan nilai kerugian sebanyak RM27 500.

Hitung bayaran pampasan yang akan diterima jika mereka menginsuranskan rumahnya pada jumlah insurans yang harus dibelinya.

*A small fire occurred in their house resulting in a loss value of RM27 500.*

*Calculate the compensation payment that would be received if they insured their house on amount of insurance they would have to buy.*

- (c) Jika keseluruhan rumah mereka telah hangus terbakar dalam suatu kebakaran, adakah mereka akan menerima pampasan sebanyak RM375 000 sekiranya mereka menginsuranskan rumahnya mengikut jumlah di 10(a)?

Berikan justifikasi anda dan nyatakan nilai pampasan yang diterima.

*If their entire house was burnt down in a fire, would they receive compensation of RM375 000 if they insure their house according to the amount in 10(a)?*

*Give your justification and state the value of compensation received.*

[4 markah]

[4 marks]

Jawapan / Answer :

(a)

(b)

(c)



**Bahagian B**  
**Section B**

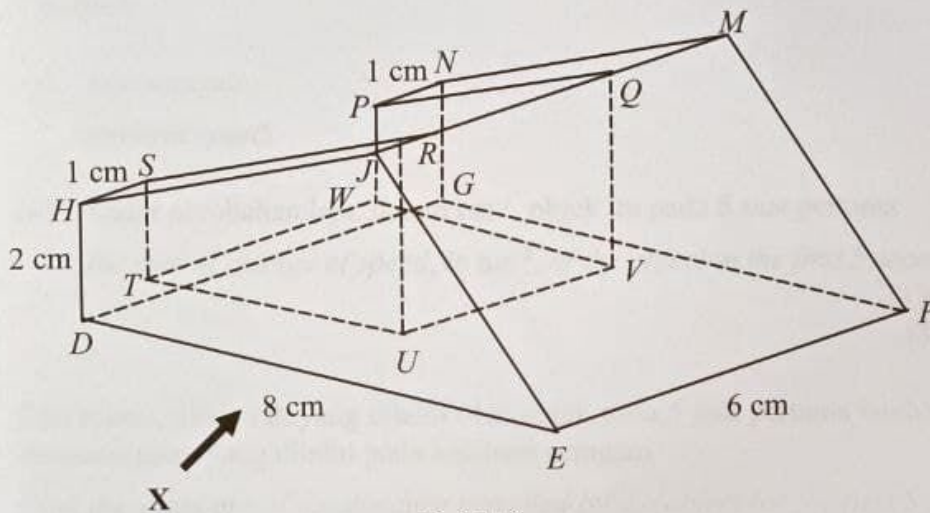
[45 markah]

[45 marks]

Jawab **semua** soalan dalam bahagian ini.Answer **all** questions in this section.

- 11 Rajah 6 menunjukkan sebuah pepejal berbentuk prisma tegak dengan tapak segi empat tepat  $DEFG$  terletak di atas permukaan mengufuk. Permukaan  $HJED$  ialah keratan rentas seragam prisma itu. Segi empat tepat  $DEFG$  dan  $TUVW$  ialah satah mengufuk. Segi empat tepat  $RUVQ$  ialah satah mencancang. Segi empat tepat  $HJRS$ ,  $PQMN$  dan  $JEFM$  ialah satah condong.  $ST = PW = 1.5$  cm,  $TU = WV = 5$  cm dan  $RU = QV = 4$  cm.

Diagram 6 shows a right prism-shaped solid with a rectangular base  $DEFG$  lying on a horizontal surface. The surface  $HJED$  is the uniform cross-section of the prism. The rectangles  $DEFG$  and  $TUVW$  are horizontal planes. The rectangle  $RUVQ$  is a vertical plane. The rectangles  $HJRS$ ,  $PQMN$  and  $JEFM$  are inclined plane.  $ST = PW = 1.5$  cm,  $TU = WV = 5$  cm and  $RU = QV = 4$  cm.

Rajah 6  
Diagram 6

Lukis dengan skala penuh,  
Draw to full scale,

- (a) pelan pepejal itu,  
the plan of the solid,
- (b) dongakan pepejal itu pada satah mencancang, yang selari dengan  $DE$  sebagaimana dilihat dari  $X$ .

the elevation of the solid on the vertical plane parallel to  $DE$  as viewed from  $X$ .

[9 markah]

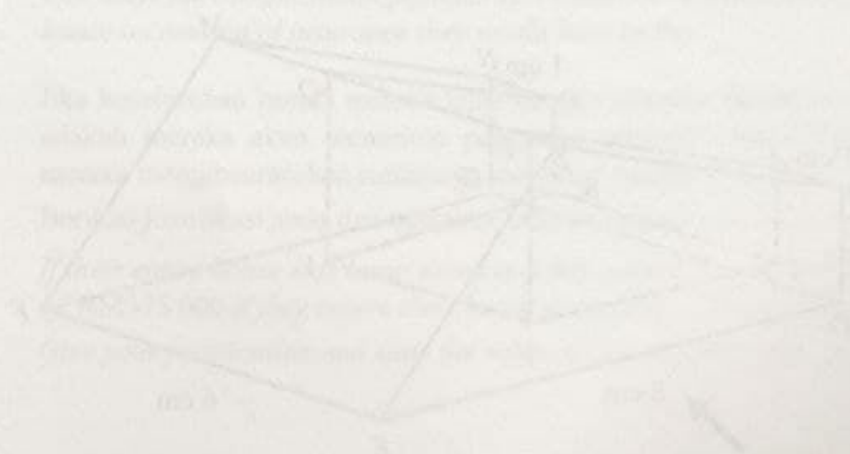
[9 marks]



Jawapan / Answer :

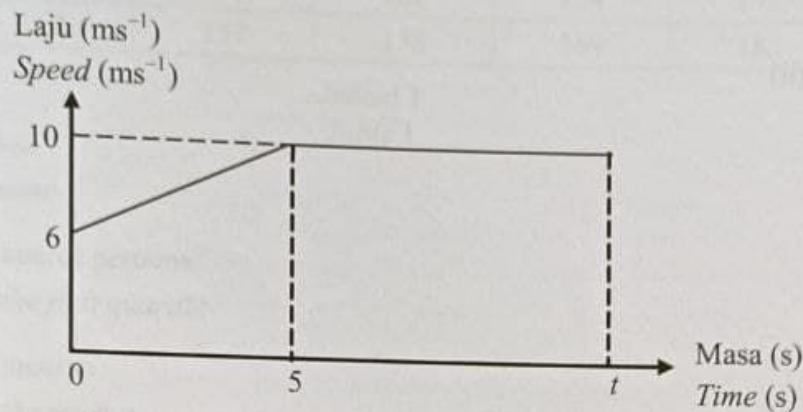
(a)

(b)





- 12 Graf laju-masa dalam Rajah 7 menunjukkan gerakan suatu objek untuk tempoh  $t$  saat.  
The speed-time graph in Diagram 7 shows the motion of an object for a period of  $t$  seconds.



Rajah 7  
Diagram 7

- (a) Hitung  
Calculate

- (i) laju seragam,  
uniform speed,
- (ii) kadar perubahan laju, dalam  $\text{ms}^{-2}$ , objek itu pada 5 saat pertama.  
the rate of change of speed, in  $\text{ms}^{-2}$ , of the object in the first 5 seconds.

[3 markah]

[3 marks]

- (b) Cari nilai  $t$ , jika jarak yang dilalui oleh objek pada 5 saat pertama ialah separuh daripada jarak yang dilalui pada kelajuan seragam.

Find the value of  $t$ , if the distance travelled by the object for the first 5 seconds is half of the distance travelled at uniform speed.

[3 markah]

[3 marks]

Jawapan / Answer :

(a) (i)

(ii)

(b)





- 13 Data dalam Jadual 1 menunjukkan tinggi, dalam cm, bagi sekumpulan 10 orang pemain bola tampar.

*Data in Table 1 shows the height, in cm, of a group of 10 volleyball players.*

|     |     |     |     |     |
|-----|-----|-----|-----|-----|
| 142 | 168 | 162 | 154 | 172 |
| 162 | 157 | 158 | 169 | 183 |

Jadual 1  
Table 1

- (a) Tentukan  
*Determine*

- (i) kuartil pertama  
*the first quartile*
- (ii) median  
*the median*
- (iii) kuartil ketiga  
*the third quartile*
- (iv) julat antara kuartil  
*the interquartile range*

[4 markah]

[4 marks]

Jawapan / Answer :

- (a) (i) .....
- (ii) .....
- (iii) .....
- (iv) .....

- (b) Jadual 2.1 menunjukkan bilangan patah perkataan yang ditaip oleh sekumpulan peserta di Bengkel Trengkas dan Kesetiausahaan dalam tempoh 5 minit.

*Table 2.1 shows the number of words typed by a group of participants in a Shorthand and Secretarial Workshop within the duration of 5 minutes.*

| Bilangan patah perkataan<br><i>Number of words</i> | Kekerapan<br><i>Frequency</i> |
|----------------------------------------------------|-------------------------------|
| 121 – 125                                          | 6                             |
| 126 – 130                                          | 9                             |
| 131 – 135                                          | 13                            |
| 136 – 140                                          | 18                            |
| 141 – 145                                          | 14                            |
| 146 – 150                                          | 10                            |

Jadual 2.1

Table 2.1

Lengkapkan Jadual 2.2 di ruang jawapan 13(b).

Hitung sisihan piawai bagi data tersebut.

*Complete Table 2.2 in the answer space 13(b).*

*Calculate standard deviation of the data.*

[6 markah]

[6 marks]

Jawapan / Answer :

(b)

| $f$             | Titik tengah,<br><i>Midpoint,</i><br>$x$ | $fx$          | $x^2$          | $fx^2$          |
|-----------------|------------------------------------------|---------------|----------------|-----------------|
| 6               | 123                                      |               |                |                 |
| 9               | 128                                      |               |                |                 |
| 13              | 133                                      |               |                |                 |
| 18              | 138                                      |               |                |                 |
| 14              | 143                                      |               |                |                 |
| 10              | 148                                      |               |                |                 |
| $\Sigma f = 70$ |                                          | $\Sigma fx =$ | $\Sigma x^2 =$ | $\Sigma fx^2 =$ |

Jadual 2.2

Table 2.2



- 14 (a) Diberi isi padu gas,  $V$  berubah secara songsang dengan tekanan,  $P$ . Diberi  $V = 2 \text{ m}^3$  dan  $P = 500 \text{ Nm}^{-2}$ , ungkapkan  $V$  dalam sebutan  $P$ .

*Given volume of gas,  $V$  varies inversely as the pressure,  $P$ . Given  $V = 2 \text{ m}^3$  and  $P = 500 \text{ Nm}^{-2}$ , express  $V$  in terms of  $P$ .*

[2 markah]

[2 marks]

- (b) Berdasarkan jawapan di 14(a), lengkapkan Jadual 3 pada ruang jawapan.

*Based on the answer in 14(a), complete Table 3 in the answer space.*

[1 markah]

[1 mark]

- (c) Untuk ceraian soalan ini, gunakan kertas graf yang disediakan pada halaman 26. Anda boleh menggunakan pembaris fleksibel.

Berdasarkan jawapan anda di 14(b) dan menggunakan skala 2 cm kepada  $100 \text{ Nm}^{-2}$  pada paksi- $x$  dan 2 cm kepada  $1 \text{ m}^3$  pada paksi- $y$ , lukis graf untuk  $100 \leq x \leq 800$ .

*For this part of the question, use the graph paper provided on page 26. You may use a flexible curve rule.*

*Based on your answers in 14(b) and using a scale of 2 cm to  $100 \text{ Nm}^{-2}$  on the  $x$ -axis, and 2 cm to  $1 \text{ m}^3$  for  $y$ -axis, draw the graph for  $100 \leq x \leq 800$ .*

[4 markah]

[4 marks]

- (d) Daripada graf di 14(c), cari isi padu gas, dalam  $\text{m}^3$ , jika tekanan gas ialah  $300 \text{ Nm}^{-2}$ .

*From the graph in 14(c), find the volume of gas, in  $\text{m}^3$ , if the pressure of gas is  $300 \text{ Nm}^{-2}$ .*

[1 markah]

[1 mark]

Jawapan / Answer :

(a)

(b)

|     |     |     |     |     |     |      |
|-----|-----|-----|-----|-----|-----|------|
| $P$ | 100 | 200 | 250 | 400 | 500 | 800  |
| $V$ | 10  | 5   | 4   |     | 2   | 1.25 |

Jadual 3

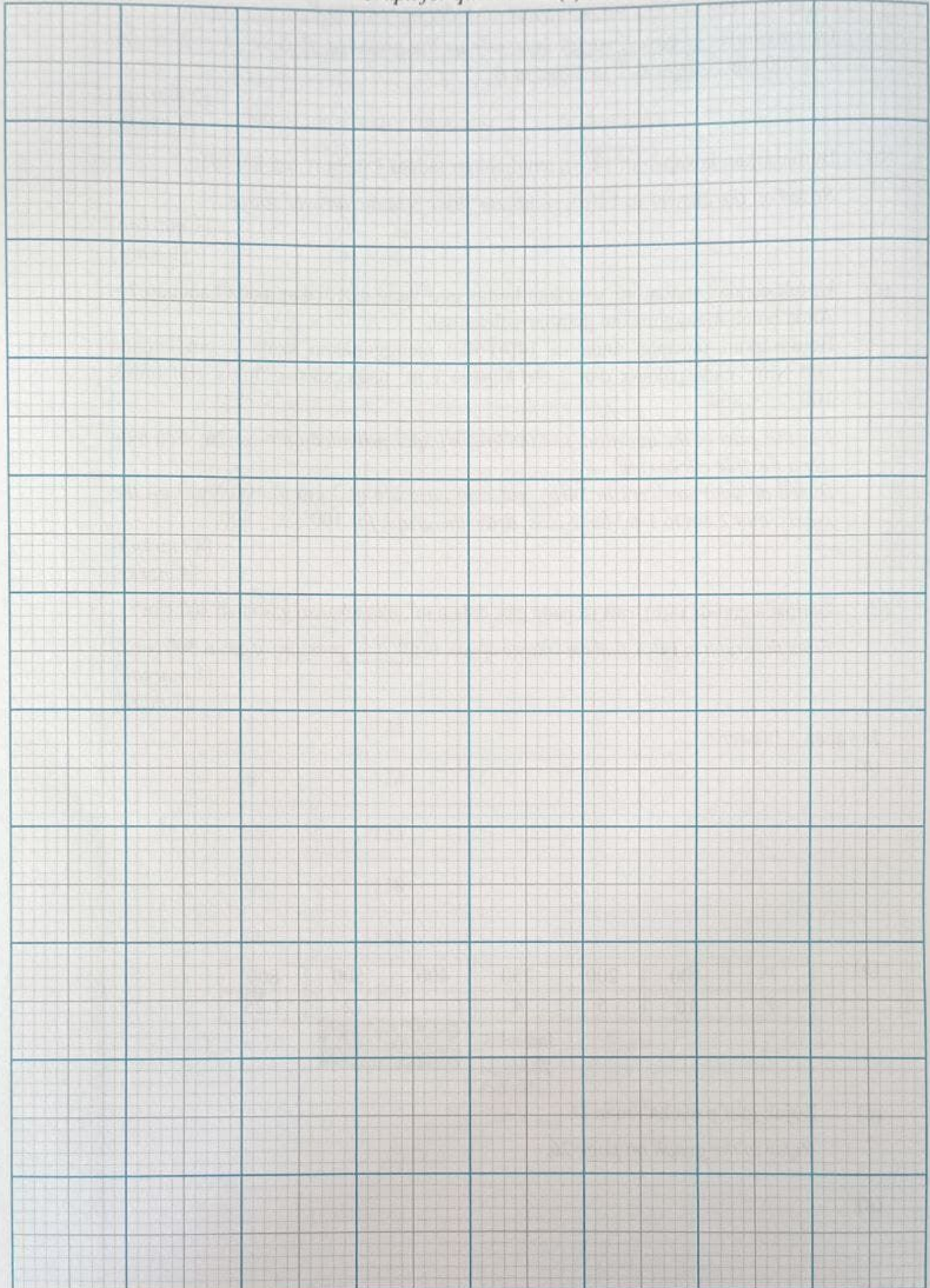
Table 3

- (c) Rujuk graf pada halaman 26.

*Refer to the graph on page 26.*

(d)

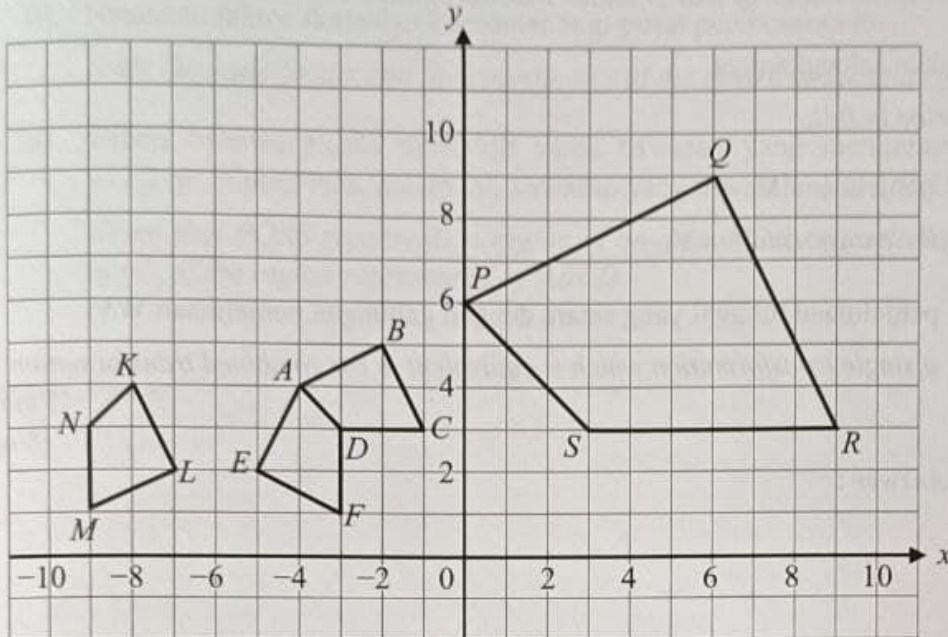
Graf untuk soal 14(c)  
*Graph for question 14(c)*





- 15 Rajah 8 menunjukkan sisi empat  $ABCD$ ,  $AEFD$ ,  $KLMN$  dan  $PQRS$  yang dilukis pada satah Cartes.

Diagram 8 shows quadrilaterals  $ABCD$ ,  $AEFD$ ,  $KLMN$  and  $PQRS$  drawn on a Cartesian plane.



Rajah 8  
Diagram 8

- (a) Penjelmaan **G** ialah satu pantulan pada garis lurus  $x = 0$ .

Penjelmaan **H** ialah satu translasi  $\begin{pmatrix} -3 \\ 2 \end{pmatrix}$ .

Transformation **G** is a reflection in the straight line  $x = 0$ .

Transformation **H** is a translation  $\begin{pmatrix} -3 \\ 2 \end{pmatrix}$ .

Nyatakan koordinat imej bagi titik  $F$  di bawah penjelmaan berikut:

State the coordinates of the image of point  $F$  under the following transformations:

- (i) **H**
- (ii) **HG**

[3 markah]

[3 marks]

Jawapan / Answer :

- (a) (i)

- (ii)

- (b) *AEFD* ialah imej bagi *ABCD* di bawah penjelmaan **V**.  
*KLMN* ialah imej bagi *AEFD* di bawah penjelmaan **W**.  
*AEFD* is the image of *ABCD* under transformation **V**.  
*KLMN* is the image of *AEFD* under transformation **W**.

Huraikan selengkapnya,

*Describe in full,*

- (i) penjelmaan **V**,  
*the transformation V*,
- (ii) penjelmaan tunggal yang setara dengan gabungan penjelmaan **WV**.  
*a single transformation which is equivalent to the combined transformation WV.*
- [5 markah]  
[5 marks]

Jawapan / Answer :

(b) (i)

(ii)



(c)  $PQRS$  ialah imej bagi  $ABCD$  di bawah satu pembesaran.

$PQRS$  is the image  $ABCD$  under an enlargement.

(i) Nyatakan faktor skala dan koordinat bagi pusat pembesaran itu.

State the scale factor and the coordinates of the centre of the enlargement.

(ii) Diberi bahawa  $PQRS$  mewakili suatu kawasan yang mempunyai keluasan  $412.2 \text{ m}^2$ , hitung luas, dalam  $\text{m}^2$ , kawasan yang diwakili oleh  $ABCD$ .

Given that  $PQRS$  represents a region of an area  $412.2 \text{ m}^2$ , calculate the area, in  $\text{m}^2$ , of the region represented by  $ABCD$ .

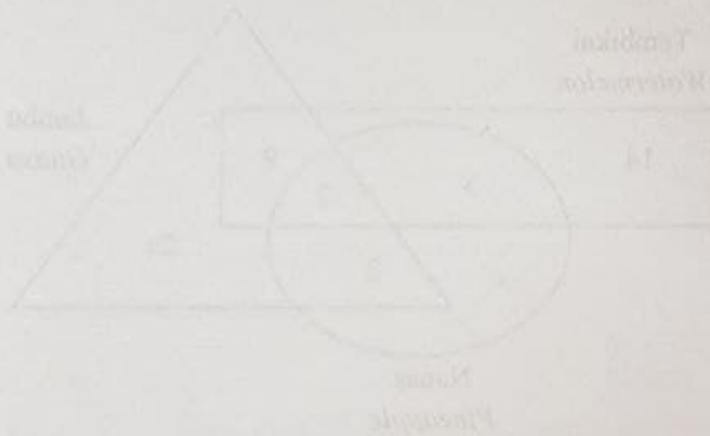
[4 markah]

[4 marks]

Jawapan / Answer :

(c) (i)

(ii)



**Bahagian C**  
**Section C**

[15 markah]

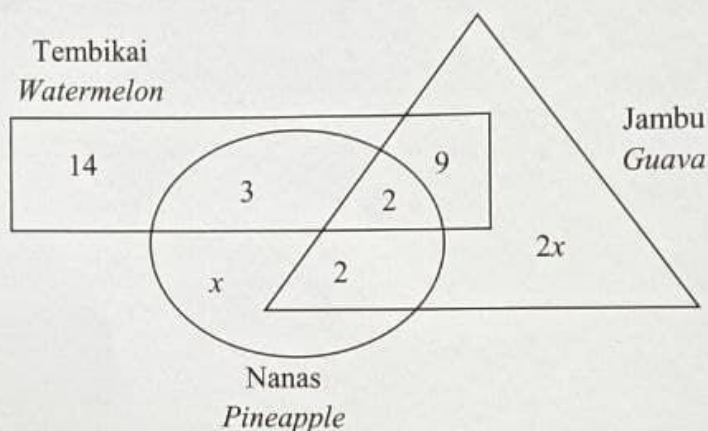
[15 marks]

Jawab **satu** soalan dalam bahagian ini.

*Answer one question in this section.*

- 16 Gambar rajah Venn di bawah menunjukkan perwakilan bagi 42 murid Kelab Usahawan Tani di sebuah sekolah yang menggemari tiga jenis buah-buahan tempatan iaitu buah tembikai, buah jambu dan buah nanas.

*The Venn diagram below shows a representation of 42 students of Usahawan Tani Club at a school who are fond of three types of local fruits, watermelon, guava and pineapple.*



- (a) Diberi bilangan murid yang menggemari buah jambu sahaja adalah dua kali ganda bilangan murid yang menggemari buah nanas sahaja.

*Given the number of students who like guava only is twice the number of students who like pineapple only.*

Hitung:

*Calculate:*

- (i) bilangan murid yang menggemari buah jambu.  
*the number of students who like guava.*
- (ii) bilangan murid yang menggemari dua jenis buah tempatan.  
*the number of students who like two types of local fruit.*

[5 markah]

[5 marks]



Jawapan / Answer :

(a) (i)

(ii)

- (b) Pada Hari Karnival Tahunan, Kelab Usahawan Tani tersebut telah mengadakan jualan jus buah tembikai dan jus buah jambu. Kedua-dua minuman itu dijual di dalam gelas kecil dan gelas besar. Kelab tersebut telah berjaya menjual 52 gelas kecil dan 35 gelas besar jus buah tembikai. Manakala berjaya menjual 40 gelas kecil dan 32 gelas besar jus buah jambu. Jumlah jualan yang diperoleh daripada jualan jus buah tembikai dan jus buah jambu masing-masing ialah RM392 dan RM332.

*On Annual Carnival Day, Usahawan Tani Club held a sale of watermelon juice and guava juice. Both drinks are sold in small glasses and large glasses. The club has managed to sell 52 small glasses and 35 large glasses of watermelon juice. While managed to sell 40 small glasses and 32 large glasses of guava juice. The total sales obtained from the sale of watermelon juice and guava juice were RM392 and RM332 respectively.*

- (i) Bina dua persamaan linear daripada situasi di atas.

*Construct two linear equations from the above situation.*

- (ii) Dengan menggunakan kaedah matriks, hitung harga sebuah gelas kecil dan harga sebuah gelas besar.

*By using the matrix method, calculate the price of a small glass and the price of a large glass.*

[6 markah]

[6 marks]

Jawapan / Answer :

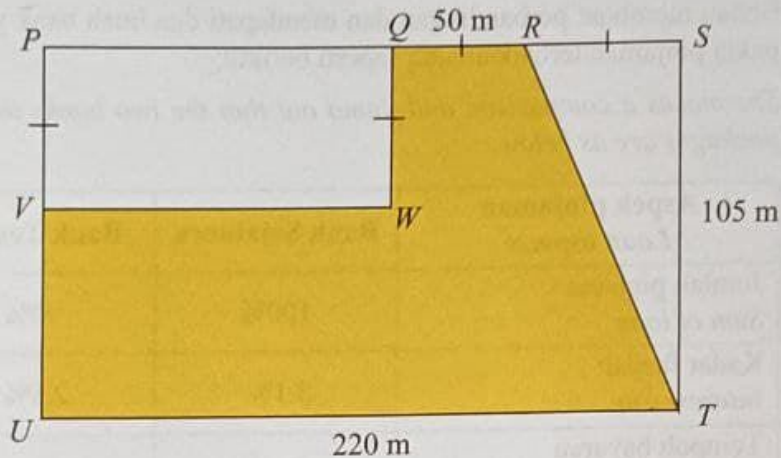
- (b) (i)

- (ii)



- (c) Pihak sekolah telah mendapat sebidang tanah untuk diusahakan oleh Kelab Usahawan Tani. Kelab tersebut telah merancang untuk menanam ketiga-tiga jenis buah tempatan yang digemari mereka. Rajah 9 menunjukkan sebidang tanah tersebut yang berbentuk segi empat tepat  $PSTU$ .

*The school has obtained a piece of land to be cultivated by the Usahawan Tani Club. The club has planned to plant all three of their favourite local fruit varieties. Diagram 9 shows a piece of land that is rectangular in shape  $PSTU$ .*



Rajah 9  
Diagram 9

Kawasan tanah yang berbentuk segi empat tepat  $PQWV$  akan ditanam dengan buah tembikai, segi tiga  $RST$  akan ditanam dengan buah jambu dan kawasan yang selebihnya akan ditanam dengan buah nanas.

Hitung luas kawasan, dalam  $m^2$ , yang akan ditanam dengan buah nanas.

*The rectangular land area  $PQWV$  will be planted with watermelon fruits, the triangle  $RST$  will be planted with guava fruits and the remaining area will be planted with pineapple fruits.*

*Calculate the land area, in  $m^2$ , to be planted with pineapple fruits.*

[4 markah]

[4 marks]

Jawapan / Answer :

(c)

- 17 Hanis baru sahaja dinaikkan pangkat sebagai pengurus di sebuah syarikat swasta di Johor Bahru dengan gaji bulanan sebanyak RM12 000. Beliau ingin membeli sebuah kereta baharu model Proton X70 1.8L Premium yang berharga RM124 000 secara pinjaman bank.

*Hanis just got promoted as a manager in a private company in Johor Bahru with monthly salary of RM12 000. She wants to buy a new car model Proton X70 1.8L Premium with the price of RM124 000 with a bank loan.*

- (a) Beliau membuat perbandingan dan mendapati dua buah bank yang menawarkan pakej pinjaman terbaik adalah seperti berikut:

*She makes a comparison and found out that the two banks that offer best loan packages are as below:*

| Aspek pinjaman<br><i>Loan aspects</i>          | Bank Sejahtera | Bank Tenang |
|------------------------------------------------|----------------|-------------|
| Jumlah pinjaman<br><i>Sum of loan</i>          | 100%           | 90%         |
| Kadar faedah<br><i>Interest rate</i>           | 3.1%           | 2.5%        |
| Tempoh bayaran<br><i>Payment period</i>        | 9 tahun        | 7 tahun     |
| Jumlah bayaran balik<br><i>Total repayment</i> | RM 158 596     |             |

Jadual 4.1

Table 4.1

Dalam Jadual 4.1, jumlah bayaran balik pinjaman Bank Tenang tidak dinyatakan.

*In Table 4.1, total loan repayment of Bank Tenang is not stated.*

- (i) Hitung jumlah bayaran balik bagi pinjaman dengan Bank Tenang.

*Calculate the total loan repayment with Bank Tenang.*

- (ii) Hitung ansuran bulanan bagi kedua-dua bank tersebut.

*Calculate the monthly installment for both banks.*

[6 markah]

[6 marks]



(a) (i)

(ii)

- (b) Setelah hampir genap setahun sejak Hanis membeli kereta baharu, beliau perlu memperbaharui cukai jalannya. Kapasiti enjin keretanya ialah 1 799 cc. Jadual 4.2 menunjukkan kadar cukai jalan kereta persendirian di Semenanjung Malaysia.

*After almost a full year since Hanis bought a new car, she needs to renew her road tax. The engine capacity of her car is 1 799 cc.*

*Table 4.2 shows the road tax rates for private car in Peninsular Malaysia.*

| Kapasiti enjin<br><i>Engine capacity</i> | Kadar cukai jalan<br><i>Road tax rate</i> |                                                                                    |
|------------------------------------------|-------------------------------------------|------------------------------------------------------------------------------------|
|                                          | Kadar asas<br><i>Base rate</i>            | Kadar progresif<br><i>Progressive rate</i>                                         |
| 1 401 cc – 1 600 cc                      | RM90.00                                   | -                                                                                  |
| 1 601 cc – 1 800 cc                      | RM200.00                                  | + RM0.40 setiap cc melebihi 1 600 cc<br><i>+ RM0.40 each cc exceeding 1 600 cc</i> |
| 1 801 cc – 2 000 cc                      | RM280.00                                  | + RM0.50 setiap cc melebihi 1 800 cc<br><i>+ RM0.50 each cc exceeding 1 800 cc</i> |
| 2 001 cc – 2 500 cc                      | RM380.00                                  | + RM1.00 setiap cc melebihi 2 000 cc<br><i>+ RM1.00 each cc exceeding 2 000 cc</i> |

Jadual 4.2  
Table 4.2

- (i) Siapakah yang mengutip cukai jalan bagi pihak kerajaan Malaysia?  
*Who collects road tax on behalf of Malaysian government?*
- (ii) Berapakah kadar asas cukai jalan, dalam RM, bagi kereta Hanis?  
*What is the basic rate of road tax, in RM, for Hanis's car?*
- (iii) Seterusnya, hitung jumlah cukai jalan yang perlu dibayar oleh Hanis.  
*Hence, calculate the amount of road tax that Hanis has to pay.*

[4 markah]

[4 marks]



Jawapan / Answer :

(b) (i)

(ii)

(iii)

- (c) Rajah 10 menunjukkan peta perjalanan Hanis dari rumah ke pejabatnya.  
*Diagram 10 shows a route map of Hanis's journey from home to her office.*



Rajah 10  
Diagram 10

Setiap persimpangan diwakili oleh huruf J, K, L, M, N, P, Q dan R. Rumah Hanis terletak di persimpangan J dan pejabatnya di persimpangan R. Nombor-nombor pula mewakili jarak, dalam km, bagi setiap jalan yang menghubungkan persimpangan-persimpangan tersebut.

*Each junctions represented by the letters, J, K, L, M, N, P, Q and R. Hanis's house located at the J junction and his office at the R junction. The numbers represent distance, in km, for every roads that connect all the junctions.*

- (i) Wakilkan laluan perjalanan Hanis dari rumah ke pejabatnya dalam bentuk graf berpemberat.

*Represent Hanis's route from home to her office in the form of weighted graph.*

- (ii) Nyatakan laluan terdekat yang boleh dilalui sekiranya Hanis perlu mengisi petrol sebelum menuju ke pejabat dan dia harus mengelak melalui kawasan sekolah. Seterusnya, nyatakan jarak, dalam km, laluan tersebut.

*State the nearest route that can be taken, if Hanis needs to refuel before heading to the office and she should avoid to passing by school area. Hence, state the distance, in km, the route.*

- (iii) Tentukan jumlah darjah bagi graf tersebut.

*Determine the sum of degrees of the graph.*

[5 markah]  
[5 marks]



Jawapan / Answer :

(c) (i)

(ii)

(iii)

**KERTAS PEPERIKSAAN TAMAT**  
**END OF QUESTION PAPER**



**MODUL PINTAS  
TINGKATAN 5**

**1449/2**

**MATEMATIK  
Kertas 2**

$2\frac{1}{2}$  jam

Dua jam tiga puluh minit

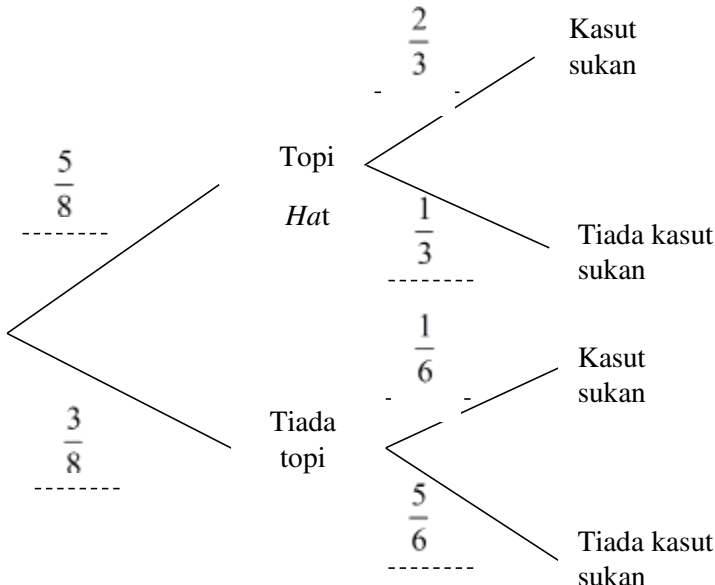
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# **PERATURAN PEMARKAHAN MATEMATIK K2**

**1449/2**

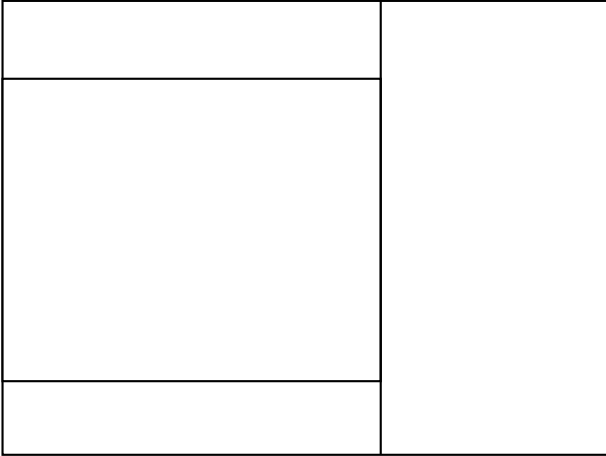
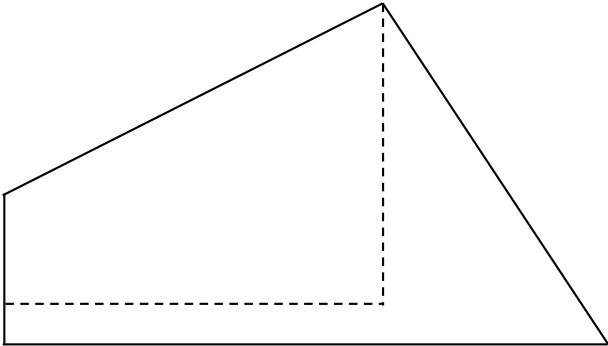


| Soalan   | Skema markah / Marking Scheme                                                                                                                                                                                                                                                                                                                             | Marks                       |             |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-------------|
|          |                                                                                                                                                                                                                                                                                                                                                           | Submarks                    | Total Marks |
| 1        | $3x^2 - 11x - 4 = 0$<br>$(x - 4)(3x + 1) = 0$<br>$x = 4, x = -\frac{1}{3}$                                                                                                                                                                                                                                                                                | 1 mark<br>1 mark<br>2 marks | 4           |
| 2        | $\angle HAC$<br>$\tan \angle HAC = \frac{24}{\sqrt{356}}$<br>$51.83^\circ$<br>Nota : Kelihatan $\sqrt{10^2 + 16^2}$ atau $\sqrt{356}$ boleh K1                                                                                                                                                                                                            | 1 mark<br>2 marks<br>1 mark | 4           |
| 3(a)     | $\frac{1.26}{2 \times 3.142}$<br>0.2                                                                                                                                                                                                                                                                                                                      | 1 mark<br>1 mark            | 5           |
| (b)      | $\frac{1}{2} \times 30 \times 30$ <i>or</i> $\frac{45}{360} \times \frac{22}{7} \times 11 \times 11$ <i>or equivalent</i><br>$\frac{1}{2} \times 30 \times 30 - \frac{45}{360} \times \frac{22}{7} \times 11 \times 11$ <i>or equivalent</i><br>402.47<br>NOTE:<br>1. Accept $\pi$ for marks.<br>2. Correct answer from incomplete working award 2 marks. | 1 mark<br>1 mark<br>1 mark  |             |
| 4(a) (i) | Sebilangan                                                                                                                                                                                                                                                                                                                                                | 1 mark                      | 4           |
| (ii)     | Sebilangan                                                                                                                                                                                                                                                                                                                                                | 1 mark                      |             |
| (b)      | 81 ialah nombor punca kuasa dua sempurna                                                                                                                                                                                                                                                                                                                  | 1 mark                      |             |
| (c)      | Jika sudut pedalamananya $60^\circ$ , maka $\Delta PQR$ ialah sebuah segi tiga sama sisi.                                                                                                                                                                                                                                                                 | 1 mark                      |             |

| Soalan | Skema markah / Marking Scheme                                                                                                                                                                                                                                                                                                                                                                                                                                        | Marks                                            |             |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|-------------|
|        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Submarks                                         | Total Marks |
| 5      | $y \geq \frac{3}{2}$<br>$y \leq -x + 6$<br>$y < 3x$                                                                                                                                                                                                                                                                                                                                                                                                                  | 1 mark<br><br>1 mark<br><br>1 mark               | 3           |
| 6      | $1\ 400 + 450 - 550 - 350 - 390 - 180 - 750$<br><br>– RM370<br><br>Aliran tunai negatif<br><br>* Mengurangkan perbelanjaan makanan dengan masak sendiri / bekal<br><br>atau<br>* Mengurangkan perbelanjaan minyak dengan menaiki kenderaan awam<br><br>atau<br>* Mengurangkan penggunaan bil utiliti dengan menjimatkan penggunaan elektrik dan air<br><br>Nota :<br>1. Kelihatan RM1 850 atau RM2 220 boleh K1<br>2. *mana-mana 1 atau setara yang relevan diterima | 1 mark<br><br>1 mark<br><br>1 mark<br><br>1 mark | 4           |
| 7(a)   |                                                                                                                                                                                                                                                                                                                                                                                  | 2 marks                                          |             |
| 7(b)   | $\left(\frac{5}{8} \times \frac{1}{3}\right) + \left(\frac{3}{8} \times \frac{1}{6}\right)$<br>$\frac{13}{48}$                                                                                                                                                                                                                                                                                                                                                       | 1 mark<br><br>1 mark                             | 4           |



| Soalan | Skema markah / Marking Scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Marks             |                |                   |   |                                    |            |   |                                                   |              |   |                                                         |              |   |                                                         |              |         |   |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------|-------------------|---|------------------------------------|------------|---|---------------------------------------------------|--------------|---|---------------------------------------------------------|--------------|---|---------------------------------------------------------|--------------|---------|---|
|        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Submarks          | Total Marks    |                   |   |                                    |            |   |                                                   |              |   |                                                         |              |   |                                                         |              |         |   |
| 8      | <table><tr><td>Minggu</td><td>Pengiraan (km)</td><td>Jarak Larian (km)</td></tr><tr><td>1</td><td><math>32 + 32 \times 0.1 = 32(1 + 0.1)</math></td><td><math>3.2(1.1)</math></td></tr><tr><td>2</td><td><math>32(1.1) + 32(1.1) \times 0.1 = 32(1.1)(1 + 0.1)</math></td><td><math>3.2(1.1)^2</math></td></tr><tr><td>3</td><td><math>32(1.1)^2 + 32(1.1)^2 \times 0.1 = 32(1.1)^2(1 + 0.1)</math></td><td><math>3.2(1.1)^3</math></td></tr><tr><td>4</td><td><math>32(1.1)^3 + 32(1.1)^3 \times 0.1 = 32(1.1)^3(1 + 0.1)</math></td><td><math>3.2(1.1)^4</math></td></tr></table> <p><math>D(x) = 3.2(1.1)^n</math></p> <p><u>Atau</u></p> <p><math>D(x) = s \left( 1 + \frac{r}{100} \right)^n</math>,                      boleh N2</p> <p><math>s = \text{larian}, r = \% \text{ tambahan jarak}</math></p> | Minggu            | Pengiraan (km) | Jarak Larian (km) | 1 | $32 + 32 \times 0.1 = 32(1 + 0.1)$ | $3.2(1.1)$ | 2 | $32(1.1) + 32(1.1) \times 0.1 = 32(1.1)(1 + 0.1)$ | $3.2(1.1)^2$ | 3 | $32(1.1)^2 + 32(1.1)^2 \times 0.1 = 32(1.1)^2(1 + 0.1)$ | $3.2(1.1)^3$ | 4 | $32(1.1)^3 + 32(1.1)^3 \times 0.1 = 32(1.1)^3(1 + 0.1)$ | $3.2(1.1)^4$ | 2 marks | 4 |
| Minggu | Pengiraan (km)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Jarak Larian (km) |                |                   |   |                                    |            |   |                                                   |              |   |                                                         |              |   |                                                         |              |         |   |
| 1      | $32 + 32 \times 0.1 = 32(1 + 0.1)$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | $3.2(1.1)$        |                |                   |   |                                    |            |   |                                                   |              |   |                                                         |              |   |                                                         |              |         |   |
| 2      | $32(1.1) + 32(1.1) \times 0.1 = 32(1.1)(1 + 0.1)$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | $3.2(1.1)^2$      |                |                   |   |                                    |            |   |                                                   |              |   |                                                         |              |   |                                                         |              |         |   |
| 3      | $32(1.1)^2 + 32(1.1)^2 \times 0.1 = 32(1.1)^2(1 + 0.1)$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | $3.2(1.1)^3$      |                |                   |   |                                    |            |   |                                                   |              |   |                                                         |              |   |                                                         |              |         |   |
| 4      | $32(1.1)^3 + 32(1.1)^3 \times 0.1 = 32(1.1)^3(1 + 0.1)$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | $3.2(1.1)^4$      |                |                   |   |                                    |            |   |                                                   |              |   |                                                         |              |   |                                                         |              |         |   |
|        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 2 marks           |                |                   |   |                                    |            |   |                                                   |              |   |                                                         |              |   |                                                         |              |         |   |
| 9(a)   | $m = \frac{3}{4}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1 mark            | 4              |                   |   |                                    |            |   |                                                   |              |   |                                                         |              |   |                                                         |              |         |   |
| (b)    | $m = \frac{4}{3}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1 mark            |                |                   |   |                                    |            |   |                                                   |              |   |                                                         |              |   |                                                         |              |         |   |
|        | $6 = \left( \frac{4}{3} \right) (2) + C$ <b>OR</b> $\frac{y-6}{x-2} = \left( \frac{4}{3} \right)$ <u>or equivalent</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1 mark            |                |                   |   |                                    |            |   |                                                   |              |   |                                                         |              |   |                                                         |              |         |   |
|        | $y = \frac{4}{3}x + \frac{10}{3}$ <u>or equivalent</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1 mark            |                |                   |   |                                    |            |   |                                                   |              |   |                                                         |              |   |                                                         |              |         |   |
| 10(a)  | RM300 000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1 mark            | 4              |                   |   |                                    |            |   |                                                   |              |   |                                                         |              |   |                                                         |              |         |   |
| (b)    | RM24 300                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1 mark            |                |                   |   |                                    |            |   |                                                   |              |   |                                                         |              |   |                                                         |              |         |   |
| (c)    | Tidak                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1 mark            |                |                   |   |                                    |            |   |                                                   |              |   |                                                         |              |   |                                                         |              |         |   |
|        | Encik Eric dan Pn Lisa hanya akan menerima pampasan maksimum RM296 800 kerana deduktibel sebanyak RM3 200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1 mark            |                |                   |   |                                    |            |   |                                                   |              |   |                                                         |              |   |                                                         |              |         |   |
|        | <u>or equivalent</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |                |                   |   |                                    |            |   |                                                   |              |   |                                                         |              |   |                                                         |              |         |   |

| Soalan | Skema markah / Marking Scheme                                                                                                                                                                                                  | Marks                                |             |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-------------|
|        |                                                                                                                                                                                                                                | Submarks                             | Total Marks |
| 11(a)  |                                                                                                                                              | 4 marks                              | 9           |
| 11(b)  |                                                                                                                                             | 5 marks                              |             |
| 12 (a) | (i) 10<br>(ii) $\frac{10-6}{5-0}$ <u>or equivalent</u><br>$\frac{4}{5}$ <u>or equivalent</u><br><u>Note:</u><br>1. Accept correct answer without working for 2 marks.                                                          | 1 mark<br>1 mark<br>1 mark           | 6           |
| (b)    | $\frac{1}{2} \times (6+10) \times 5$ <u>or equivalent</u><br>$\frac{1}{2} \times (t-5) \times 10$ <u>or equivalent</u><br>$\frac{1}{2} \times (6+10) \times 5 = \frac{1}{2} \times (t-5) \times 10$ <u>or equivalent</u><br>13 | 1 mark<br>1 mark<br>1 mark<br>1 mark |             |



| Soalan          | Skema markah / Marking Scheme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Marks                |                        |                             |         |       |        |   |     |     |        |        |   |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |                 |  |                      |                        |                             |        |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|------------------------|-----------------------------|---------|-------|--------|---|-----|-----|--------|--------|---|-----|-------|--------|---------|----|-----|-------|--------|---------|----|-----|-------|--------|---------|----|-----|-------|--------|---------|----|-----|-------|--------|---------|-----------------|--|----------------------|------------------------|-----------------------------|--------|
|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Submarks             | Total Marks            |                             |         |       |        |   |     |     |        |        |   |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |                 |  |                      |                        |                             |        |
| 13(a)(i)        | 157                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1 mark               |                        |                             |         |       |        |   |     |     |        |        |   |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |                 |  |                      |                        |                             |        |
| (ii)            | 162                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1 mark               |                        |                             |         |       |        |   |     |     |        |        |   |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |                 |  |                      |                        |                             |        |
| (iii)           | 169                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1 mark               |                        |                             |         |       |        |   |     |     |        |        |   |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |                 |  |                      |                        |                             |        |
| (iv)            | 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1 mark               |                        |                             |         |       |        |   |     |     |        |        |   |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |                 |  |                      |                        |                             |        |
| 13(b)           | <table><tr><th><math>f</math></th><th>Titik tengah, <math>x</math></th><th><math>fx</math></th><th><math>x^2</math></th><th><math>fx^2</math></th></tr><tr><td>6</td><td>123</td><td>738</td><td>15 129</td><td>90 774</td></tr><tr><td>9</td><td>128</td><td>1 152</td><td>16 384</td><td>147 456</td></tr><tr><td>13</td><td>133</td><td>1 729</td><td>17 689</td><td>229 957</td></tr><tr><td>18</td><td>138</td><td>2 484</td><td>19 044</td><td>342 792</td></tr><tr><td>14</td><td>143</td><td>2 002</td><td>20 449</td><td>286 286</td></tr><tr><td>10</td><td>148</td><td>1 480</td><td>21 904</td><td>219 040</td></tr><tr><td><math>\Sigma f = 70</math></td><td></td><td><math>\Sigma fx = 9\ 585</math></td><td><math>\Sigma fx = 110\ 599</math></td><td><math>\Sigma fx^2 = 1\ 316\ 305</math></td></tr></table><br>$Min, \bar{x} = \frac{9585}{70}$<br>136.9286<br>$Varian, \sigma^2 = \frac{1316305}{70} - \left(\frac{9585}{70}\right)^2$<br>54.9235<br>Sisihan piawai, $\sigma = \sqrt{54.9235}$<br>7.41 | $f$                  |                        | Titik tengah, $x$           | $fx$    | $x^2$ | $fx^2$ | 6 | 123 | 738 | 15 129 | 90 774 | 9 | 128 | 1 152 | 16 384 | 147 456 | 13 | 133 | 1 729 | 17 689 | 229 957 | 18 | 138 | 2 484 | 19 044 | 342 792 | 14 | 143 | 2 002 | 20 449 | 286 286 | 10 | 148 | 1 480 | 21 904 | 219 040 | $\Sigma f = 70$ |  | $\Sigma fx = 9\ 585$ | $\Sigma fx = 110\ 599$ | $\Sigma fx^2 = 1\ 316\ 305$ | 1 mark |
| $f$             | Titik tengah, $x$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | $fx$                 |                        | $x^2$                       | $fx^2$  |       |        |   |     |     |        |        |   |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |                 |  |                      |                        |                             |        |
| 6               | 123                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 738                  |                        | 15 129                      | 90 774  |       |        |   |     |     |        |        |   |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |                 |  |                      |                        |                             |        |
| 9               | 128                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1 152                |                        | 16 384                      | 147 456 |       |        |   |     |     |        |        |   |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |                 |  |                      |                        |                             |        |
| 13              | 133                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1 729                |                        | 17 689                      | 229 957 |       |        |   |     |     |        |        |   |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |                 |  |                      |                        |                             |        |
| 18              | 138                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 2 484                |                        | 19 044                      | 342 792 |       |        |   |     |     |        |        |   |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |                 |  |                      |                        |                             |        |
| 14              | 143                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 2 002                | 20 449                 | 286 286                     |         |       |        |   |     |     |        |        |   |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |                 |  |                      |                        |                             |        |
| 10              | 148                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1 480                | 21 904                 | 219 040                     |         |       |        |   |     |     |        |        |   |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |                 |  |                      |                        |                             |        |
| $\Sigma f = 70$ |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | $\Sigma fx = 9\ 585$ | $\Sigma fx = 110\ 599$ | $\Sigma fx^2 = 1\ 316\ 305$ |         |       |        |   |     |     |        |        |   |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |                 |  |                      |                        |                             |        |
|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1 mark               |                        |                             |         |       |        |   |     |     |        |        |   |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |                 |  |                      |                        |                             |        |
|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1 mark               |                        |                             |         |       |        |   |     |     |        |        |   |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |                 |  |                      |                        |                             |        |
|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1 mark               |                        |                             |         |       |        |   |     |     |        |        |   |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |                 |  |                      |                        |                             |        |
|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1 mark               |                        |                             |         |       |        |   |     |     |        |        |   |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |                 |  |                      |                        |                             |        |
|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1 mark               |                        |                             |         |       |        |   |     |     |        |        |   |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |    |     |       |        |         |                 |  |                      |                        |                             |        |

| Soalan | Skema markah / Marking Scheme                                                                                                                                                                                                                                                                                                                                                                                                                 | Marks                                            |             |     |            |     |      |     |     |     |    |   |   |            |   |      |        |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|-------------|-----|------------|-----|------|-----|-----|-----|----|---|---|------------|---|------|--------|
|        |                                                                                                                                                                                                                                                                                                                                                                                                                                               | Submarks                                         | Total Marks |     |            |     |      |     |     |     |    |   |   |            |   |      |        |
| 14(a)  | $V \propto \frac{1}{P}$ atau $2 = \frac{k}{500}$<br><br>$V = \frac{1000}{P}$                                                                                                                                                                                                                                                                                                                                                                  | 1 mark<br><br>1 mark                             |             |     |            |     |      |     |     |     |    |   |   |            |   |      |        |
| (b)    | <table border="1"><tr><td><math>P</math></td><td>100</td><td>200</td><td>250</td><td>400</td><td>500</td><td>800</td></tr><tr><td><math>V</math></td><td>10</td><td>5</td><td>4</td><td><b>2.5</b></td><td>2</td><td>1.25</td></tr></table>                                                                                                                                                                                                   | $P$                                              |             | 100 | 200        | 250 | 400  | 500 | 800 | $V$ | 10 | 5 | 4 | <b>2.5</b> | 2 | 1.25 | 1 mark |
| $P$    | 100                                                                                                                                                                                                                                                                                                                                                                                                                                           | 200                                              |             | 250 | 400        | 500 | 800  |     |     |     |    |   |   |            |   |      |        |
| $V$    | 10                                                                                                                                                                                                                                                                                                                                                                                                                                            | 5                                                |             | 4   | <b>2.5</b> | 2   | 1.25 |     |     |     |    |   |   |            |   |      |        |
| (c)    | <u>Graph</u><br>Axes are drawn in the correct direction, uniform scale for $0 \leq P \leq 800$ and $0 \leq V \leq 10$ .<br><br>5 points and 1 point* plotted accurately<br><br>Smooth and continuous curve without straight line(s) and passes through all the 6 correct points $0 \leq P \leq 800$ and $0 \leq V \leq 10$ .<br><br><u>Notes</u> : (1) 5 points plotted correctly award 1 mark<br>(2) Other scale being used, subtract 1 mark | 1 mark<br><br>1 mark<br><br>1 mark<br><br>1 mark |             |     |            |     |      |     |     |     |    |   |   |            |   |      |        |
| (d)    | $3.2 \leq V \leq 3.4$                                                                                                                                                                                                                                                                                                                                                                                                                         | 1 mark                                           |             |     |            |     |      |     |     |     |    |   |   |            |   |      |        |
| 15(a)  | (i) $(-6, 3)$<br>(ii) $(3, 1) \rightarrow (0, 3)$                                                                                                                                                                                                                                                                                                                                                                                             | 1 mark<br><br>2 mark                             | 8           |     |            |     |      |     |     |     |    |   |   |            |   |      |        |
| (b)    | (i) pantulan pada garis lurus $y = -x$ atau garis $AD$<br><i>reflection in the line <math>y = -x</math> or line <math>AD</math></i><br><br>(ii) putaran $90^0$ ikut arah jam pada pusat $(-6, 6)$<br><i>rotation of <math>90^0</math> clockwise about the centre <math>(-6, 6)</math></i>                                                                                                                                                     | 2 mark<br><br>3 mark                             |             |     |            |     |      |     |     |     |    |   |   |            |   |      |        |
| (c)    | (i) Faktor skala = 3 / <i>scale factor</i> = 3<br>Pusat pembesaran = $(-6, 3)$ / <i>centre</i> = $(-6, 3)$<br><br>(ii) $3^2 \times \text{luas } ABCD = 412.2$<br><br>luas $ABCD = 45.8 \text{ m}^2$                                                                                                                                                                                                                                           | 1 mark<br><br>2 mark<br><br>1 mark               |             |     |            |     |      |     |     |     |    |   |   |            |   |      |        |
|        |                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                  |             |     |            |     |      |     |     |     |    |   |   |            |   |      |        |
|        |                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                  |             |     |            |     |      |     |     |     |    |   |   |            |   |      |        |
|        |                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                  | 12          |     |            |     |      |     |     |     |    |   |   |            |   |      |        |

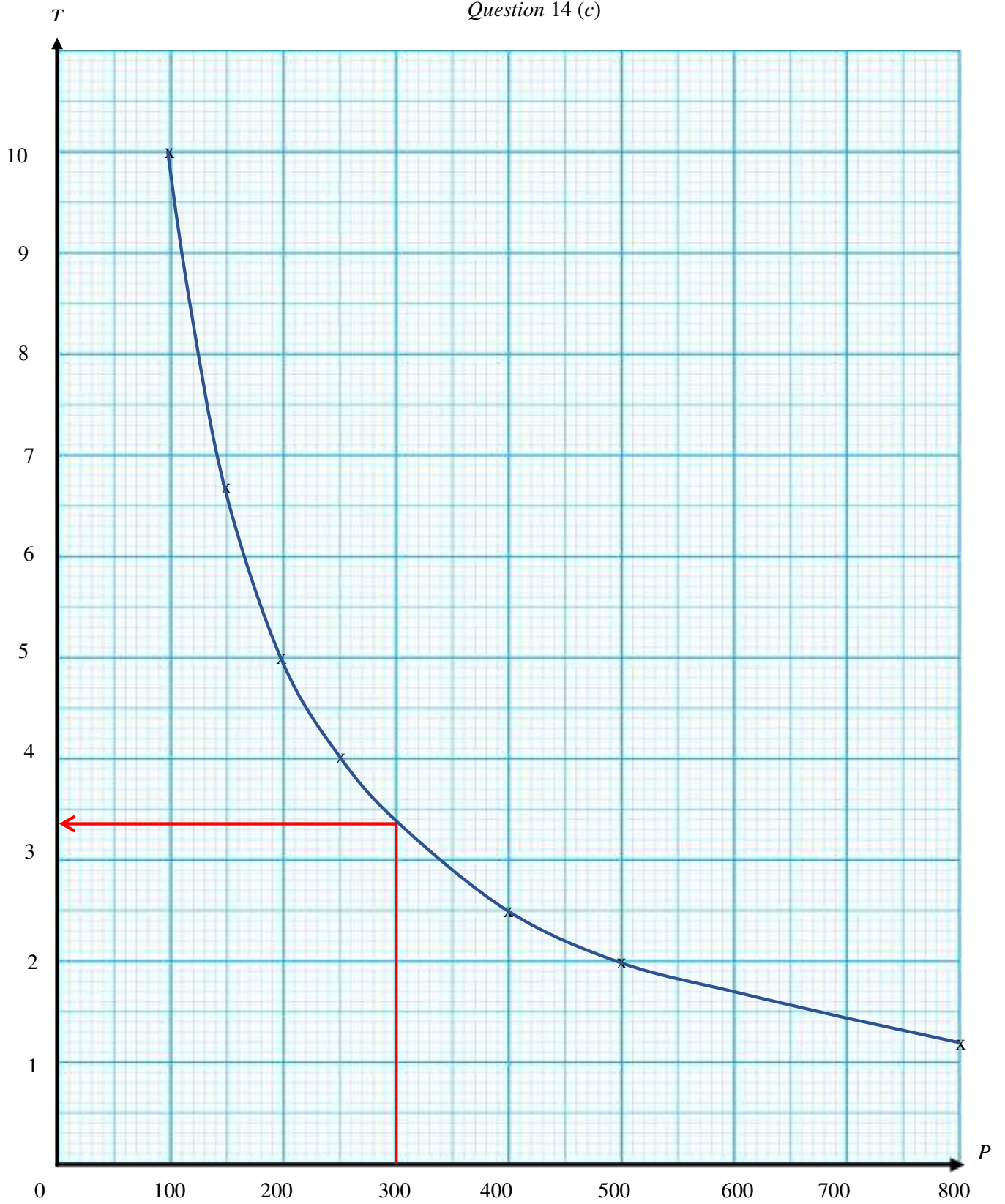


| Soalan   | Skema markah / Marking Scheme                                                                                                                                  | Marks            |             |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------|
|          |                                                                                                                                                                | Submarks         | Total Marks |
| 16(a)(i) | $2x + x = 42 - 14 - 3 - 9 - 2 - 2$                                                                                                                             | 1 mark           | 15          |
|          | $x = 4$                                                                                                                                                        | 1 mark           |             |
|          | $9 + 2 + 2 + 8$                                                                                                                                                | 1 mark           |             |
|          | 21                                                                                                                                                             | 1 mark           |             |
|          | (ii) $3 + 2 + 9$ atau 14                                                                                                                                       | 1 mark           |             |
|          |                                                                                                                                                                |                  |             |
|          | (b)(i) $5x + 35y = 352$ atau $40x + 32y = 332$                                                                                                                 | 1 mark<br>1 mark |             |
|          |                                                                                                                                                                |                  |             |
|          | (ii) $\begin{pmatrix} 52 & 35 \\ 40 & 32 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 392 \\ 332 \end{pmatrix}$                        | 1 mark           |             |
|          | $\begin{pmatrix} x \\ y \end{pmatrix} = \frac{1}{52(32) - 35(40)} \begin{pmatrix} 32 & -35 \\ -40 & 52 \end{pmatrix} \begin{pmatrix} 392 \\ 332 \end{pmatrix}$ | 1 mark           |             |
| 16(c)    | $x = 3.5$                                                                                                                                                      | 1 mark           |             |
|          | $y = 6$                                                                                                                                                        | 1 mark           |             |
|          | $[105 \times 220] - [120 \times 50] - \left[ \frac{1}{2} \times 50 \times 105 \right]$                                                                         | 3 marks          |             |
|          | 14 475                                                                                                                                                         | 1 mark           |             |

| Soalan    | Skema markah / Marking Scheme                                                                                                                                                                                             | Marks    |             |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------|
|           |                                                                                                                                                                                                                           | Submarks | Total Marks |
| 17(a) (i) | $124000 \times \frac{90}{100}$ <u>or</u> 111 600 <u>or</u> equivalent                                                                                                                                                     | 1 mark   |             |
|           | $111600 + 111600 \times \frac{2.5}{100} \times 7$ <u>or</u> equivalent                                                                                                                                                    | 1 mark   |             |
|           | 131 130                                                                                                                                                                                                                   | 1 mark   |             |
|           |                                                                                                                                                                                                                           |          |             |
|           |                                                                                                                                                                                                                           |          |             |
|           |                                                                                                                                                                                                                           |          |             |
| 17(a)(ii) | $\frac{158596}{9 \times 12}$ <u>or</u> $\frac{131130}{7 \times 12}$ <u>or</u> equivalent                                                                                                                                  | 1 mark   |             |
|           | Bank Sejahtera : 1 468.48                                                                                                                                                                                                 | 1 mark   |             |
|           | Bank Tenang : 1 561.07                                                                                                                                                                                                    | 1 mark   |             |
|           |                                                                                                                                                                                                                           |          |             |
| 17(b) (i) | Jabatan Pengangkutan Jalan <u>atau</u> JPJ                                                                                                                                                                                | 1 mark   |             |
|           | (ii) 200                                                                                                                                                                                                                  | 1 mark   |             |
|           | (iii) $200 + (1799 - 1600) \times 0.40$ <u>or</u> equivalent                                                                                                                                                              | 1 mark   |             |
|           | 279.60                                                                                                                                                                                                                    | 1 mark   |             |
|           |                                                                                                                                                                                                                           |          |             |
| 17(c) (i) | <p><u>Note:</u><br/>Accept any orientation of graph with correct vertices and edges.<br/>All vertices and edges correctly drawn without weightage, award P1.<br/>Accept 2 mistakes of vertices and / or edges for P1.</p> | 2 marks  |             |
|           | (ii) $J \rightarrow K \rightarrow L \rightarrow N \rightarrow M \rightarrow P \rightarrow R$                                                                                                                              | 1 mark   |             |
|           | 26                                                                                                                                                                                                                        | 1 mark   |             |
|           | (iii) 20                                                                                                                                                                                                                  | 1 mark   |             |
|           |                                                                                                                                                                                                                           |          |             |



Soalan 14 (c)  
Question 14 (c)



Langkah penyelesaian soalan 17 (sebagai rujukan)

17 (a) (i)

$$\begin{aligned}\text{Jumlah pinjaman} &= 124000 \times \frac{90}{100} \\ &= 111600\end{aligned}$$

Jumlah bayaran balik, A;

$$A = P + Prt$$

$$\begin{aligned}A &= 111600 + 111600 \times \frac{2.5}{100} \times 7 \\ &= \text{RM } 131\,130\end{aligned}$$

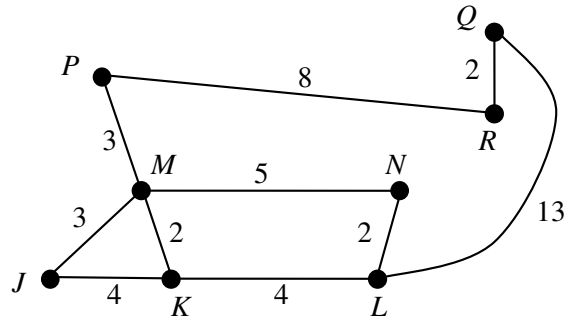
|      |                                                                                               |                                                                                            |
|------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| (ii) | Bank Sejahtera;<br>Ansuran bulanan $= \frac{131130}{7 \times 12}$<br>$= \text{RM } 1\,561.07$ | Bank Tenang;<br>Ansuran bulanan $= \frac{158596}{9 \times 12}$<br>$= \text{RM } 1\,468.48$ |
|------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|

(b) (i) Jabatan Pengangkutan Jalan / JPJ

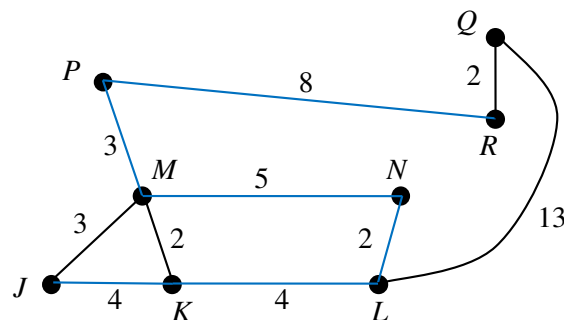
(ii) Kadar asas bagi kategori 1 799 cc = RM200.00

(iii) Jumlah cukai jalan = Kadar asas + kadar progresif  
 $= 200 + (1799 - 1600) \times 0.40$   
 $= \text{RM } 279.60$

(c) (i)



(ii)  $J \rightarrow K \rightarrow L \rightarrow N \rightarrow M \rightarrow P \rightarrow R$   
 $= 4 + 4 + 2 + 5 + 3 + 8 = 26 \text{ km}$



(iii) Jumlah darjah;  $\Sigma d(v) = 2E$   
 $= 2(10)$   
 $= 20$