

Jawab semua soalan.

- 1 Antara berikut, yang manakah merupakan suatu jujukan?

Which of the following is a sequence?

- A $-0.32, -0.16, -0.8, -0.4, \dots$
 B $21, 63, 126, 387, \dots$
 C $92, 88, 84, 79, \dots$
 D $100, 116, 132, 148, \dots$

$$\div 2$$

$$-0.32, -0.16, -0.8, -0.4, \dots$$

$$\times 3$$

$$21, 63, 126, 387, \dots$$

$$-4$$

$$92, 88, 84, 79, \dots$$

$$+16$$

$$100, 116, 132, 148, \dots$$

- 2 Harga sebiji kek keju dan sebotol jus oren masing-masing ialah RM40 dan RM15.

Azwan mempunyai RM120 dan dia membeli 3 botol jus oren. Baki duit itu digunakan untuk membeli kek keju.

Berapakah jumlah maksimum kek keju yang boleh dibeli jika setiap kek itu diberi diskaun sebanyak 25%?

The price of a cheesecake and a bottle of orange juice are RM40 and RM15 respectively.

Azwan has RM120 and he buys 3 bottles of orange juice. The balance is used to buy the cheesecake.

What is the maximum number of cheesecake that he can buy if each cheesecake is given a discount of 25%?

- A 1
 B 2
 C 3
 D 4

$$\frac{75}{100} \times 3(40) + 15x \leq 120$$

$$90 + 15x \leq 120$$

$$15x \leq 30$$

$$x \leq 2$$

- 3 Seorang pekerja menggunakan 16 keping jubin untuk menampal lantai sebuah bilik yang berbentuk segi empat tepat. Panjang dan lebar setiap keping jubin segi empat tepat itu masing-masing ialah 80 cm dan 65 cm.

Hitung luas, dalam cm^2 , lantai yang ditampal oleh jubin itu.

A worker uses 16 tiles to cover the floor of a rectangular room. The length and the width of each rectangular tile are 80 cm and 65 cm respectively.

Calculate the area, in cm^2 , of the floor covered with tiles.

- A 3.25×10^2
 B 2.32×10^3
 C 4.60×10^3
 D 8.32×10^4

$$\text{Luas} = 16 \times 80 \text{ cm} \times 65 \text{ cm}$$

$$= 83200 \text{ cm}^2$$

$$= 8.32 \times 10^4 \text{ cm}^2$$

- 4 Encik Salleh telah membuat pinjaman peribadi sebanyak RM100 000 daripada sebuah bank dengan kadar faedah 4.18% setahun. Tempoh bayaran balik adalah selama 8 tahun. Berapakah ansuran bulanan yang akan dibayar oleh Encik Salleh?

Encik Salleh obtained a personal loan of RM100 000 from a bank with an interest rate of 4.18% per annum.

The repayment period is 8 years.

What is the monthly instalment that Encik Salleh will pay?

- A RM1 077
 B RM1 085
 C RM1 390
 D RM1 564

$$A = P + Prt$$

$$= 100000 + 100000(0.0418)(8)$$

$$= 100000 + 33440$$

$$= 133440$$

$$\text{M. 2.} = \frac{133440}{8 \times 12}$$

$$= 1390$$

5 Ungkapkan $1 \times 5^5 + 4 \times 5^3 + 2 \times 5^1$ sebagai suatu nombor dalam asas lima.

Express $1 \times 5^5 + 4 \times 5^3 + 2 \times 5$ as a number in base five.

A 142_5

B 1042_5

C 10402_5

☒ D 104020_5

$$\begin{array}{r} 1 \\ 5^5 \end{array} + \begin{array}{r} 4 \\ 5^3 \end{array} + \begin{array}{r} 2 \\ 5^1 \end{array} = \begin{array}{r} 1 \\ 5^5 \end{array} + \begin{array}{r} 0 \\ 5^4 \end{array} + \begin{array}{r} 4 \\ 5^3 \end{array} + \begin{array}{r} 0 \\ 5^2 \end{array} + \begin{array}{r} 2 \\ 5^1 \end{array} + \begin{array}{r} 0 \\ 5^0 \end{array}$$

$$\begin{array}{r} 5 \overline{) 3635} \\ 5 \overline{) 727-0} \\ 5 \overline{) 145-2} \\ 5 \overline{) 29-0} \\ 5 \overline{) 5-4} \\ 1-0 \end{array}$$

6 Bilangan murid yang menyertai suatu pertandingan ialah seramai 220002₃.

Berapakah bilangan hadiah dalam asas 4 jika bilangan hadiah yang disediakan hanya 6% daripada jumlah keseluruhan penyertaan?

The number of students who participate in a competition is 220002₃.

What is the number of prizes in base 4 if the number of prizes prepared is only 6% from the total number of participation?

A 122_4

☒ B 213_4

C 221_4

D 312_4

$$\begin{array}{r} 220002_3 = 2(3^5) \\ + 2(3^4) \\ + 2(3^0) \end{array}$$

$$= 650_{10}$$

$$650 \times \frac{6}{100} = 39_{10}$$

$$= 213_4$$

$$\begin{array}{r} 4 \overline{) 39} \\ 4 \overline{) 9-3} \\ 2-1 \end{array}$$

7 Encik Danish merupakan seorang akauntan yang mempunyai pendapatan tahunan sebanyak RM180 000. Dia memiliki sebuah kereta dan sebuah banglo.

Antara cukai berikut, yang manakah **tidak** dikenakan setiap tahun kepada Encik Danish?

Encik Danish is an accountant with an annual income of RM180 000. He owns a car and a bungalow.

Which of the following taxes is **not** imposed annually on Encik Danish?

A Cukai jalan

Road tax

B Cukai pendapatan

Income tax

C Cukai pintu

Property assessment tax

☒ D Cukai jualan dan perkhidmatan

Sales and service tax

kereta ✓

✓

✓ Banglo

S.S.T.

8 Suraya memiliki sebuah rumah kediaman di Bandar Q yang mempunyai nilai tahunan RM5 880. Diberi bahawa kadar cukai pintu yang dikenakan oleh Majlis Perbandaran ialah 5%.

Berapakah (cukai pintu) yang perlu dibayar oleh Suraya untuk setiap enam bulan?

Suraya owns a house at Town Q which has an annual value of RM5 880. It is given that the property assessment tax rate imposed by Municipal Council is 5%.

What is the property assessment tax payable by Suraya every six months?

A RM294

B RM196

☒ C RM147

D RM49

$$\begin{array}{l} \text{setahun} \\ = 5880 \times \frac{5}{100} = 294 \end{array}$$

$$\begin{array}{l} \frac{1}{2} \text{ tahun} \\ = 294 \div 2 = 147 \end{array}$$

SULIT

- 9 Rajah 1 menunjukkan maklumat kenderaan Encik Teoh yang ingin diinsuranskan di Kota Kinabalu. Jadual 1 menunjukkan kadar yang dikenakan bagi RM1 000 yang pertama daripada jumlah yang diinsuranskan bagi polisi komprehensif. Diagram 1 shows the information of Encik Teoh's car that needs to be insured in Kota Kinabalu. Table 1 shows the rate charged for the first RM1 000 of the sum insured for comprehensive policy.

Jumlah yang ingin diinsuranskan Sum insured	RM120 000
Kapasiti enjin Engine capacity	1997 cc
NCD	45%

Rajah 1
Diagram 1

Kapasiti enjin tidak melebihi (cc) Engine capacity not exceeding (cc)	Sabah dan Sarawak Sabah and Sarawak
1650	RM220.00
→ 2200	RM243.90

Jadual 1
Table 1

Berapakah premium kasar bagi kereta Encik Teoh untuk polisi komprehensif?

Rumus mengira premium asas polisi komprehensif bagi Sabah dan Sarawak = Kadar bagi RM1 000 yang pertama + RM20.30 bagi setiap RM1 000 atau sebahagian daripada itu bagi nilai yang melebihi RM1 000 yang pertama.

What is the gross premium of Encik Teoh's car under the comprehensive policy?

The formulae to calculate the basic premium of the comprehensive policy for Sabah and Sarawak = Rate for the first RM1 000 + RM20.30 for each RM1 000 or part thereof on value exceeding the first RM1 000.

- A RM1 462.78 B RM1 449.64
C RM1 196.82 D RM1 186.07

- 10 Antara ketaksamaan berikut, yang manakah memuaskan ketaksamaan linear serentak, $3 - 2x \leq 1$ dan $4x - 3 \leq 37$?

Which of the following inequalities satisfies the simultaneous linear inequalities, $3 - 2x \leq 1$ dan $4x - 3 \leq 37$?

- A $-2 \leq x \leq 8.5$ B $1 \leq x \leq 8.5$
C $1 \leq x \leq 10$ D $2 \leq x \leq 10$

$$120000 - 1000 = 119000$$

$$\frac{119000}{1000} = 119$$

$$243.90 + 119 \times 20.30$$

$$= 2659.60$$

$$NCD = 2659.60 \times \frac{45}{100}$$

$$= 1196.82$$

$$\text{Bayar} = 2659.60 - 1196.82$$

$$= 1462.78$$

$$3 - 2x \leq 1$$

$$3 - 1 \leq 2x$$

$$2 \leq 2x$$

$$1 \leq x$$

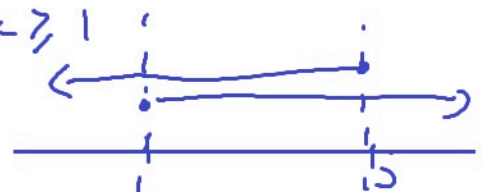
$$x \geq 1$$

$$4x - 3 \leq 37$$

$$4x \leq 37 + 3$$

$$4x \leq 40$$

$$x \leq 10$$



$$1 \leq x \leq 10$$

- 11 Diberi bahawa rumus untuk menukar Farenheit, °F kepada Celcius, °C ialah $F = \frac{9}{5}C + 32$. Takat lebur Bromin ialah 19.04 °F. \rightarrow
 Tentukan takat lebur Bromin dalam Celcius.

It is given that the formulae for converting Farenheit, °F to Celcius, °C is $F = \frac{9}{5}C + 32$. The melting point of Bromine is 19.04 °F.

Determine the melting point of Bromine in Celcius.

- A -22.3
 B -7.2
 C 28.4
 D 42.6

- 12 Ayden memandu kereta dari Kluang ke Bangi dengan laju purata 96 km/j selama 2 jam 45 minit. Dalam perjalanan pulang, dia perlu tiba di Kluang dalam tempoh 2 jam 15 minit.

Berapakah laju purata, dalam km/j, keretanya supaya dia dapat tiba tepat pada masanya?

Ayden drives his car from Kluang to Bangi with an average speed of 96 km/h in 2 hours and 45 minutes. On his return journey, he needs to arrive in Kluang in 2 hours and 15 minutes.

What is the average speed, in km/h, of his car so that he can arrive promptly?

- A 104.53
 B 109.40
 C 117.33
 D 122.79

- 13 Graf manakah yang mewakili fungsi berikut:

Which graph represents the following function:

$$f(x) = -2(x+1)(x-3)$$

$$19.04 = \frac{9}{5}C + 32$$

$$-\frac{324}{25} = \frac{9}{5}C$$

$$C = -\frac{324}{25} \times \frac{5}{9}$$

$$= -7.2^\circ\text{C}$$

$$s_1 = 96 \text{ km/h}, t_1 = 2 \frac{45}{60} = 2.75 \text{ h}$$

$$t_2 = 2 \frac{15}{60} = 2.25 \text{ h}$$

$$d_1 = s_1 \times t_1$$

$$= 96 \times 2.75$$

$$= 264 \text{ km}$$

$$d_2 = d_1 = 264 \text{ km}$$

$$s = \frac{d_2}{t_2} = \frac{264}{2.25}$$

$$= 117.33 \text{ km/h}$$

$$a = -2$$

$$a = -2$$

$$y = 0, 0 = -2(x+1)(x-3)$$

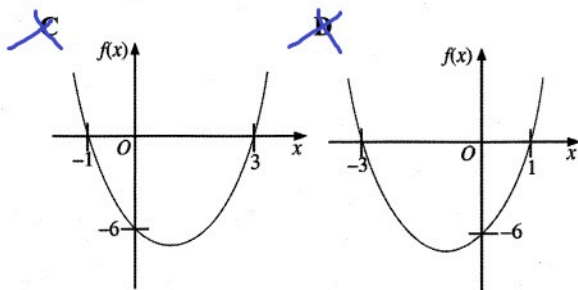
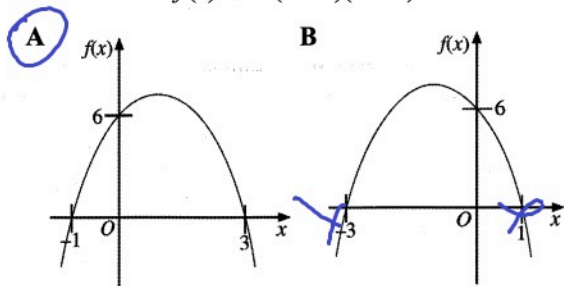
$$x+1=0$$

$$x-3=0$$

$$x=-1$$

$$x=3$$

$$x=0, f(0) = -2(1)(-3) = 6$$



- 14 Kelab Pelancongan SMK Indera menganjurkan satu lawatan sambil belajar ke Kuala Lumpur. Bilangan murid yang boleh menyertai lawatan ini selebihnya-lebihnya 36 orang dan bilangan murid lelaki ialah sekurang-kurangnya 3 kali bilangan murid perempuan.

Tentukan bilangan minimum dan maksimum murid lelaki jika bilangan murid perempuan yang menyertai lawatan itu ialah 6 orang.

The Tourism Club of SMK Indera organises a field trip to Kuala Lumpur. The number of students who can join the trip is at most 36 and the number of boys is at least 3 times the number of girls.

Determine the minimum and maximum number of boys if the number of girls who join the trip is 6.

	Minimum Minimum	Maksimum Maximum
A	18	29
B	18	30
C	19	29
D	19	30

$$x - \text{lelaki} \quad y - \text{perempuan}$$

$$x + y \leq 36$$

$$x \geq 3y$$

$$y = 6, \quad x \geq 3(6)$$

$$x \geq 18$$

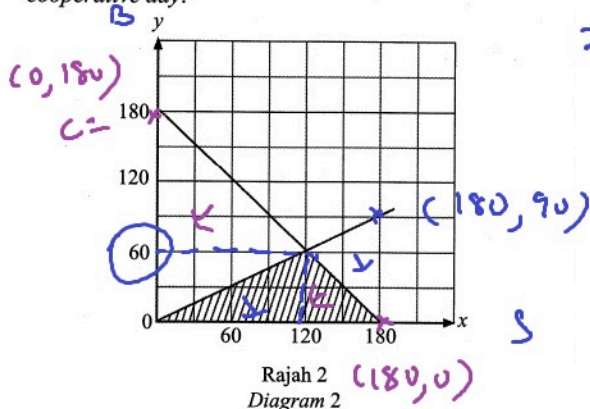
$$x + 6 \leq 36$$

$$x \leq 36 - 6$$

$$x \leq 30$$

- 15 Rajah 2 menunjukkan graf yang mewakili suatu sistem ketaksamaan linear bagi x biji ban sardin dan y biji ban kacang yang didermakan oleh Encik Rajoo sempena hari koperasi sekolah.

Diagram 2 shows a graph which represents a system of linear inequalities of x sardine buns and y bean buns donated by Encik Rajoo in conjunction with school's cooperative day.



$$x \geq 0, \quad y \geq 0$$

$$m = \frac{90 - 0}{180 - 0} = \frac{1}{2}$$

$$y = \frac{1}{2}x + 0$$

$$2y \leq x$$

$$y \leq \frac{1}{2}x$$

$$x \geq 2y$$

Antara berikut, yang manakah betul tentang graf tersebut?

Which of the following is correct about the graph?

- A $2y \neq x$
 B $x + y \geq 180$
 C Bilangan minimum ban sardin ialah 120
The minimum number of sardine buns is 120
 D Bilangan maksimum ban kacang ialah 60 biji
The maximum number of bean buns is 60

$$m = \frac{0 - 180}{180 - 0} = -1$$

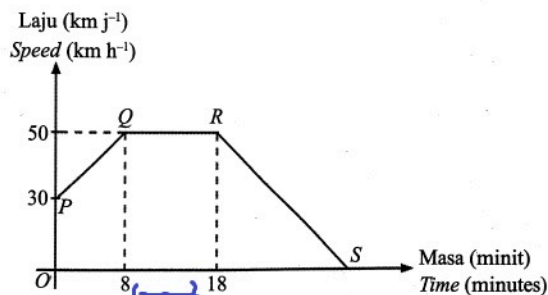
$$y = -x + 180$$

$$y \leq -x + 180$$

$$x + y \leq 180$$

- 16 Rajah 3 menunjukkan graf laju-masa bagi gerakan sebuah motosikal dari bandar P ke bandar S melalui bandar Q dan bandar R.

Diagram 3 shows the speed-time graph for the motion of a motorcycle from town P to town S through town Q and town R.



Rajah 3
Diagram 3

Antara pernyataan berikut, yang manakah betul tentang gerakan motosikal itu?

Which of the following statements is correct about the motion of the motorcycle?

A RS : Bergerak pada arah bertentangan dan laju berkurang
Moves in opposite direction and speed decreases

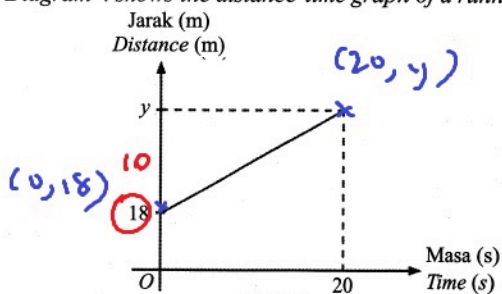
B RS : Bergerak pada arah sama dan laju bertambah
Moves in the same direction and speed increases

C QR : Bergerak dengan laju seragam selama 10 minit
Moves at a uniform speed for 10 minutes

D QR : Berhenti selama 10 minit
Stops for 10 minutes

- 17 Rajah 4 menunjukkan graf jarak-masa bagi seorang pelari.

Diagram 4 shows the distance-time graph of a runner.



Rajah 4
Diagram 4

Diberi bahawa laju pelari tersebut ialah 4 m s^{-1} , cari nilai y .

Given that the speed of the runner is 4 m s^{-1} , find the value of y .

- A 100
B 90
C 80
D 70

$$\begin{aligned} \frac{y - 18}{20 - 0} &= 4 \\ y - 18 &= 80 \\ y &= 80 + 18 \\ &= 98 \end{aligned}$$

- 18 Jadual 2 menunjukkan beberapa nilai bagi dua pemboleh ubah, L dan M .
Table 2 shows some values of two variables, L and M .

L	2	3
M	6	4

Jadual 2
Table 2

Tentukan ubahan dalam bentuk persamaan yang melibatkan M dan L .

Determine the variation in the form of equation that involves M and L .

- A $M = \frac{12}{L}$ B $M = \frac{4}{3L}$
C $M = 3L$ D $M = \frac{4}{3}L$
- 19 P berubah secara langsung dengan kuasa dua Q dan secara songsang dengan R . Diberi bahawa $P = 18$ apabila $Q = 3$ dan $R = 2$.
Cari nilai R apabila $P = 10$ dan $Q = 4$.

P varies directly as the square of Q and inversely as R . It is given that $P = 18$ when $Q = 3$ and $R = 2$.

Find the value of R when $P = 10$ and $Q = 4$.

- A $\frac{32}{5}$ B $\frac{24}{5}$
C $\frac{5}{6}$ D $\frac{5}{8}$

- 20 Diberi bahawa matriks $P = \begin{bmatrix} 2 & -3 & 4 \\ -1 & 0 & 6 \\ 3 & 7 & 2 \\ 6 & 3 & 11 \end{bmatrix}$

It is given that matrix $P = \begin{bmatrix} 2 & -3 & 4 \\ -1 & 0 & 6 \\ 3 & 7 & 2 \\ 6 & 3 & 11 \end{bmatrix}$

Antara maklumat berikut, yang manakah betul tentang matriks P ?

Which of the following information is correct about matrix P ?

	Peringkat matriks Order of matrix	Unsur P_{23} Element P_{23}
A	4×3	7
B	4×3	6
C	3×4	7
D	3×4	6

- 21 Diberi:

Given:

$$\begin{bmatrix} x & -1 \\ 4 & 1 \end{bmatrix} + \begin{bmatrix} -\frac{1}{3} & \frac{1}{2} \\ -2 & \frac{2}{3} \end{bmatrix} + \begin{bmatrix} -8 & 1 \\ -7 & -5 \end{bmatrix} = \begin{bmatrix} -5 & \frac{1}{2} \\ 3 & y \end{bmatrix}$$

Hitung nilai x dan nilai y .

Calculate the value of x and of y .

- A $x = 2, y = -2$ B $x = 2, y = -6$
C $x = 4, y = -2$ D $x = 4, y = -6$

$$m \propto \frac{1}{L}$$

$$m = \frac{k}{L}$$

$$6 = \frac{k}{2}$$

$$k = 6 \times 2 = 12$$

$$m = \frac{12}{L}$$

$$4 = \frac{k}{3}$$

$$k = 4 \times 3 = 12$$

$$P \propto \frac{Q^2}{R}$$

$$P = \frac{kQ^2}{R}$$

$$18 = \frac{k \cdot 3^2}{2}$$

$$k = \frac{18 \times 2}{3^2} = 4$$

$$P = \frac{4Q^2}{R}$$

$$10 = \frac{4(4)^2}{R}$$

$$R = \frac{64}{5} = 12.8$$

$$x - 3(-\frac{1}{3}) + (-8) = -5$$

$$x + 1 - 8 = -5$$

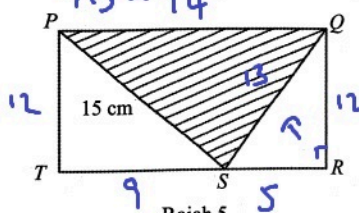
$$x = -5 - 1 + 8 = 2$$

$$1 - 3(-\frac{2}{3}) + (-5) = y$$

$$y = 1 + 2 - 5 = -2$$

- 22 Rajah 5 menunjukkan segi empat tepat PQRT dan segi tiga PQS.

Diagram 5 shows rectangle PQRT and triangle PQS.



Rajah 5
Diagram 5

Diberi bahawa $PS : QR : RS = \frac{1}{4} : \frac{1}{5} : \frac{1}{12}$
Hitung perimeter, dalam m, kawasan berlorek.

It is given that $PS : QR : RS = \frac{1}{4} : \frac{1}{5} : \frac{1}{12}$
Calculate the perimeter, in m, of the shaded region.

- A 42.00 B 47.85
C 52.00 D 52.21

$$PS : QR : RS = \frac{1}{4} : \frac{1}{5} : \frac{1}{12} \times 60$$

$$4 \mid 4 \ 5 \ 12$$

$$1 \ 5 \ 3$$

$$LCM = 4 \times 5 \times 3 = 60$$

$$= 15 : 12 : 5$$

$$PS \quad QR \quad RS$$

$$15 \quad 12 \quad 5$$

$$15 \quad 12 \quad 5$$

$$QS = \sqrt{5^2 + 12^2}$$

$$= 13$$

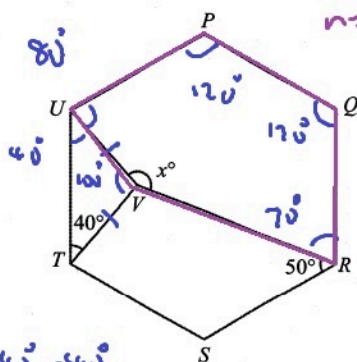
$$P_{sh} = 14 + 13 + 15$$

$$= 42$$

$$73 = \sqrt{15^2 - 12^2}$$

$$= 9$$

- 23 Rajah 6 menunjukkan heksagon sekata PQRSTU.
Diagram 6 shows a regular heksagon PQRSTU.



Rajah 6
Diagram 6

Diberi bahawa $UV = TV$, cari nilai x .
Given that $UV = TV$, find the value of x .

- A 100 B 130
C 150 D 160

$$Int \angle = \frac{(6-2) \times 180^\circ}{6}$$

$$= 120^\circ$$

$$120^\circ - 50^\circ = 70^\circ$$

$$170^\circ - 40^\circ = 80^\circ$$

$$S. Int \angle = \frac{(5-2) \times 180^\circ}{3}$$

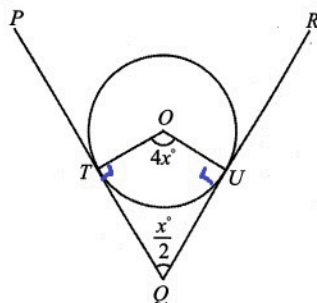
$$= 540^\circ$$

$$x = 540^\circ - 80^\circ - 120^\circ - 120^\circ - 70^\circ$$

$$= 150^\circ$$

- 24 Rajah 7 menunjukkan sebuah bulatan dengan pusat O. PTQ dan RUQ ialah tangen kepada bulatan itu masing-masing di T dan U.

Diagram 7 shows a circle with centre O. PTQ and RUQ are the tangents to the circle at T and U respectively.



Rajah 7
Diagram 7

$$0.5 \times 2$$

$$4x + \left(\frac{x}{2}\right) = 180^\circ$$

$$4.5x = 180^\circ$$

$$x = \frac{180^\circ}{4.5}$$

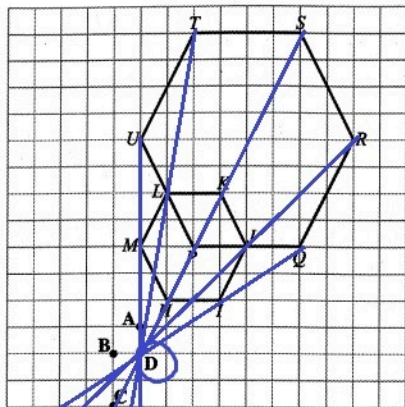
$$= 40^\circ$$

Cari nilai x .

Find the value of x .

- A 20 B 40
C 72 D 80

- 25 Rajah 8 menunjukkan dua heksagon, $HIJKLM$ dan $PQRSTU$ yang dilukis pada grid segi empat sama. *Diagram 8 shows two hexagons, $HIJKLM$ and $PQRSTU$ drawn on square grids.*



Rajah 8
Diagram 8

Diberi bahawa $PQRSTU$ ialah imej bagi $HIJKLM$ di bawah suatu pembesaran.

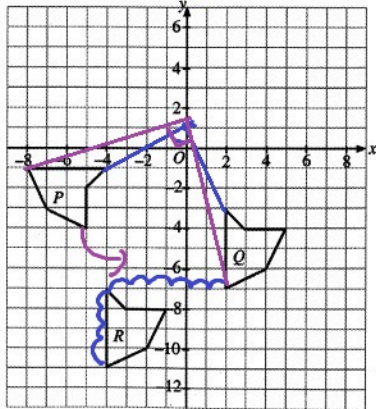
Antara titik A, B, C dan D, yang manakah pusat pembesaran itu?

It is given that $PQRSTU$ is the image of $HIJKLM$ under an enlargement.

Which of the points, A, B, C or D, is the centre of the enlargement?

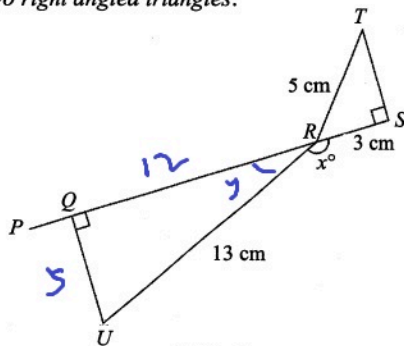
- 26 Rajah 9 menunjukkan tiga pentagon yang dilukis pada grid segi empat sama. Pentagon R ialah imej bagi pentagon P di bawah gabungan transformasi VW.

Diagram 9 shows three pentagons drawn on the square grids. Pentagon R is the image of pentagon P under the combined transformation VW.



Rajah 9
Diagram 9

- 27 Dalam Rajah 10, PQRS ialah satu garis lurus. RQU dan RST adalah dua buah segi tiga bersudut tegak. In Diagram 10, PQRS is a straight line. RQU and RST are two right angled triangles.



Rajah 10
Diagram 10

Diberi bahawa $QR = 4RS$, cari nilai bagi $\tan x^\circ$.
Given that $QR = 4RS$, find the value of $\tan x^\circ$.

- A $\frac{5}{12}$ B $\frac{4}{3}$
C $\frac{5}{12}$ D $\frac{4}{3}$

Apakah transformasi W dan transformasi V?
What are transformations W and V?

	W	V
A	Putaran 90° ikut arah jam pada pusat (0, 1) Clockwise rotation of 90° about the centre (0, 1)	Translasi $\begin{pmatrix} -4 \\ -6 \end{pmatrix}$ Translation $\begin{pmatrix} -4 \\ -6 \end{pmatrix}$
B	Putaran 90° ikut arah jam pada pusat (-1, -2) Clockwise rotation of 90° about the centre (-1, -2)	Translasi $\begin{pmatrix} -4 \\ -6 \end{pmatrix}$ Translation $\begin{pmatrix} -4 \\ -6 \end{pmatrix}$
C	Putaran 90° lawan arah jam pada pusat (0, 1) Anticlockwise rotation of 90° about the centre (0, 1)	Translasi $\begin{pmatrix} -6 \\ -4 \end{pmatrix}$ Translation $\begin{pmatrix} -6 \\ -4 \end{pmatrix}$
D	Putaran 90° lawan arah jam pada pusat (-1, -2) Anticlockwise rotation of 90° about the centre (-1, -2)	Translasi $\begin{pmatrix} -6 \\ -4 \end{pmatrix}$ Translation $\begin{pmatrix} -6 \\ -4 \end{pmatrix}$

$$QR = 4RS$$

$$= 4(3)$$

$$= 12$$

$$UR = \sqrt{13^2 - 12^2}$$

$$= 5$$

$$\sqrt{13^2 - 12^2}$$

$$\tan x = -\tan y$$

$$= -\frac{5}{12}$$

$$\sin x = \sin y$$

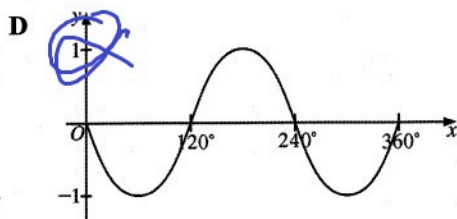
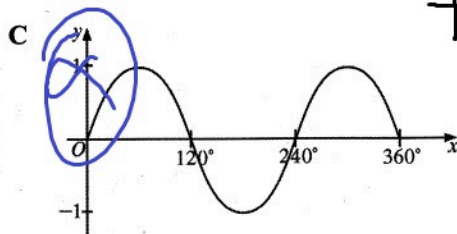
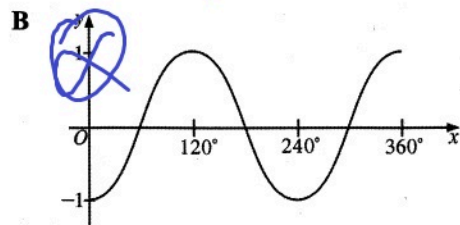
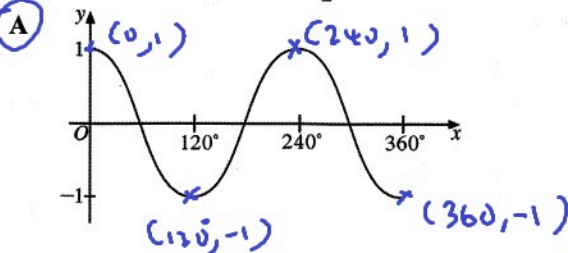
$$\cos x = -\cos y$$

28 Graf manakah yang mewakili $y = \cos \frac{3}{2}x$ untuk $0^\circ \leq x \leq 360^\circ$?

$y = \cos 1.5x$



Which graph represents $y = \cos \frac{3}{2}x$ for $0^\circ \leq x \leq 360^\circ$?



29 Antara pernyataan majmuk berikut, yang manakah Palsu?

Which of the following compound statements is False?

A $3 + 2 = 6$ atau $3 \times 2 = 6$

$3 + 2 = 6$ or $3 \times 2 = 6$

F or $T \Rightarrow T$

B $3^2 = 9$ atau $3^3 = 9$

$3^2 = 9$ or $3^3 = 9$

T or $F \Rightarrow T$

C $4 - 1 = 3$ dan $4 \div 1 = 3$

$4 - 1 = 3$ and $4 \div 1 = 3$

T and $F \Rightarrow F$

D $-7 < -3$ dan $7 > 3$

$-7 < -3$ and $7 > 3$

T and $T \Rightarrow T$

30 Tentukan kontrapositif bagi implikasi yang diberikan.

Determine the contrapositive for the given implication.

Jika $k = 7$, maka $2k - 11 = 3$

If $k = 7$, then $2k - 11 = 3$

A Jika $2k - 11 = 3$, maka $k = 7$

If $2k - 11 = 3$, then $k = 7$

B Jika $k \neq 7$, maka $2k - 11 \neq 3$

If $k \neq 7$, then $2k - 11 \neq 3$

C Jika $2k - 11 \neq 3$, maka $k \neq 7$

If $2k - 11 \neq 3$, then $k \neq 7$

D Jika $2k - 11 = 3$, maka $k \neq 7$

If $2k - 11 = 3$, then $k \neq 7$

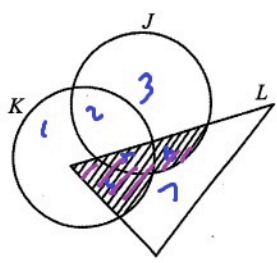
If p then q

If $\neg q$ then $\neg p$

If $2k - 11 \neq 3$ then $k \neq 7$

31 Rajah 11 ialah gambar rajah Venn yang menunjukkan set J, set K dan set L dengan keadaan set semesta, $\xi = J \cup K \cup L$.

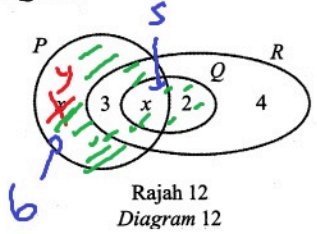
Diagram 11 is a Venn diagram that shows set J, set K and set L such that the universal set, $\xi = J \cup K \cup L$.



Rajah 11
Diagram 11

- Set manakah mewakili rantau berlorek?
Which set represents the shaded region?
- A $K \cap L \cap J$
 - B $(K \cup L) \cap J$
 - C $(K \cap J) \cup L$
 - D $(K \cup J) \cap L$**

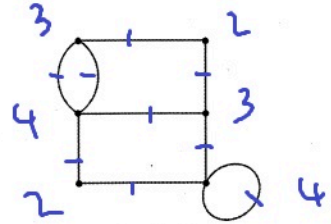
32 Rajah 12 ialah gambar rajah Venn yang menunjukkan bilangan unsur dalam set P, set Q dan set R dengan keadaan set semesta, $\xi = P \cup Q \cup R$.
Diagram 12 is a Venn diagram that shows the number of elements in set P, set Q and set R such that the universal set, $\xi = P \cup Q \cup R$.



Rajah 12
Diagram 12

- Diberi bahawa $n(P) = n(R)$ dan $y - x = 1$.
Cari $n(P \cup Q)$.
It is given that $n(P) = n(R)$ and $y - x = 1$.
Find $n(P \cup Q)$.
- A 10
 - B 12
 - C 16**
 - D 18

33 Rajah 13 menunjukkan satu graf yang mempunyai gelung dan berbilang tepi.
Diagram 13 shows a graph with a loop and multiple edges.



Rajah 13
Diagram 13

Tentukan bilangan tepi dan jumlah darjah bagi graf tersebut.
Determine the number of edges and sum of degree of the graph.

$$K \cup J : 1, 2, 3, 4, 5, 6$$

$$L : 4, 5, 6, 7$$

$$(K \cup J) \cap L = 4, 5, 6$$

$$n(P) = n(R)$$

$$7x + x + 3 = 3 + x + 2 + 4$$

$$y - x = 1$$

$$6 - 1 = x$$

$$x = 5$$

$$n(P \cup Q) = 6 + 3 + 5 + 2 = 16$$

$$\sum d = 3 + 2 + 4 + 3 + 2 + 4 = 18$$

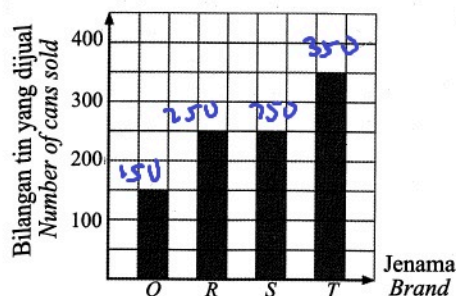
	Bilangan tepi Number of edge	Bilangan darjah Sum of degree
A	9	18
B	9	20
C	8	16
D	8	18

$$= 2(9) = 18$$

- 34 Rajah 14 ialah carta bar yang menunjukkan jumlah bilangan tin susu jenama Q, R, S dan T yang dijual dalam tempoh enam bulan pertama pada satu tahun.

Jadual 3 menunjukkan jumlah jualan susu itu dalam enam bulan terakhir pada tahun yang sama.

Diagram 14 is a bar chart showing the total number of milk cans of brands Q, R, S and T sold during the first six months of a year. Table 3 shows the total sales of the milk in the last six months of the same year.



Rajah 14
Diagram 14

Jenama Brand	Jumlah jualan (dibandingkan dengan jualan enam bulan pertama) Total sales (compared to the sales in the first six months)		
Q	150	empat kali four times	$150 \times 4 = 600$
R	250	tiga kali three times	$250 \times 3 = 750$
S	250	dua kali two times	$250 \times 2 = 500$
T	350	tiada none	350

Jadual 3
Table 3

Tentukan mod jenama susu yang dijual sepanjang tahun itu.

Determine the mode of the milk brands sold the whole year.

- A Q B R
C S D T

Jumlah

$$150 + 600 = 750$$

$$250 + 750 = 1000$$

$$250 + 500 = 750$$

$$350 + 350 = 700$$

- 35 Jadual 4 menunjukkan taburan kekerapan skor sekumpulan murid dalam satu kuiz.

Table 4 shows the frequency distribution of the scores obtained by a group of students in a quiz.

Skor Score	1	2	3	4	5
Kekerapan Frequency	10	x	11	5	4

Jadual 4
Table 4

Diberi bahawa skor median ialah 2.5, cari nilai x.

Given that the median score is 2.5, find the value of x.

- A 8 B 9
C 10 D 11

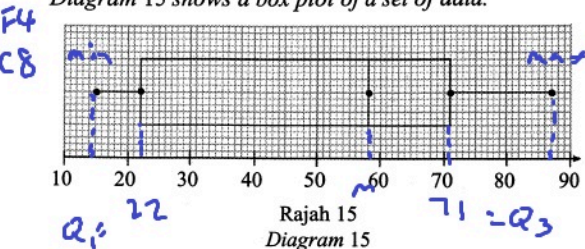
$$\text{median} = \frac{24.3}{2} = 12.15$$

$$10 + x = 11 + 5 + 4$$

$$x = 20 - 10$$

$$= 10$$

36 Rajah 15 menunjukkan plot kotak bagi satu set data.
Diagram 15 shows a box plot of a set of data.



$$\begin{aligned} I.R. &= Q_3 - Q_1 \\ &= 71 - 22 \\ &= 49 \end{aligned}$$

Cari julat antara kuartil.
Find the interquartile range.
A 36 B 49 C 58 D 72

37 Jadual 5 menunjukkan bilangan ahli pasukan badminton SMK Maju.
Table 5 shows the number of badminton team members of SMK Maju.

Kategori Category	Bilangan ahli Number of members	
	Perempuan Female	Lelaki Male
Bawah 15 tahun Under 15	(w) x	7
Bawah 18 tahun Under 18	8	15

Jadual 5
Table 5

Dua orang ahli dipilih secara rawak seorang demi seorang dari ahli perempuan dan kebarangkalian kedua-dua ahli bawah 15 tahun dipilih ialah $\frac{5}{17}$.

Hitung jumlah ahli pasukan badminton sekolah itu.
Two members are selected at random one by one from the female members and the probability that both members chosen who are under 15 is $\frac{5}{17}$.

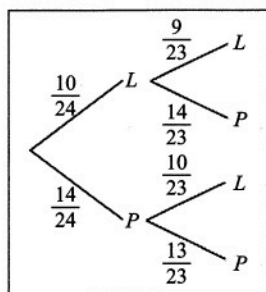
Calculate the total number of badminton team members of the school.
A 25 B 30 C 35 D 40

$$\begin{aligned} \frac{x}{x+8} \cdot \frac{x-1}{x+8-1} &= \frac{5}{17} \\ 17x(x-1) &= 5(x+8)(x+7) \\ 17x^2 - 17x &= 5(x^2 + 7x + 8x + 56) \\ 17x^2 - 17x &= 5x^2 + 75x + 280 \\ 12x^2 - 92x - 280 &= 0 \\ \text{Tekan kalkulator:} \\ x &= 10, \quad x = -7/3 \text{ (rejected)} \end{aligned}$$

$$\begin{aligned} \text{Jumlah} &= 10 + 8 + 7 + 15 \\ &= 40 \end{aligned}$$

- 38 Terdapat 10 orang murid lelaki, L dan 14 orang murid perempuan, P dalam Kelas 5 Proaktif. Dua orang murid dipilih secara rawak untuk menyertai jawatankuasa kebajikan kelas. Rajah 16 ialah gambar rajah pokok yang menunjukkan cara pemilihan dua orang murid tersebut.

There are 10 boys, L and 14 girls, P in Class 5 Proaktif. Two students are chosen at random to join the welfare committee of the class. Diagram 16 is a tree diagram that shows the selection method of the two students.



Rajah 16
Diagram 16

Hitung kebarangkalian bahawa dua orang murid yang dipilih itu adalah jantina yang sama.

Calculate the probability that the two chosen students are of the same gender.

A $\frac{15}{92}$
B $\frac{17}{36}$
C $\frac{34}{69}$
D $\frac{37}{72}$

$P(\text{same gender})$
 $= P(LL) + P(P P)$
 $= \frac{10}{24} \times \frac{9}{23} + \frac{14}{24} \times \frac{13}{23}$
 $= \frac{34}{69}$

- 39 Jadual 6 ialah jadual kekerapan yang menunjukkan jisim buah mangga, dalam kg, yang diperoleh dari sebuah kebun. Table 6 is a frequency table that shows the mass of mangoes, in kg, obtained from a farm.

Jisim (kg) Mass (kg)	Kekerapan Frequency	Titik tengah Midpoint	Kekerapan \times Titik tengah Frequency \times Midpoint	(Titik tengah) ² (Midpoint) ²	Kekerapan \times (Titik tengah) ² Frequency \times (Midpoint) ²
0.4 – 0.6	12	0.5	6	0.25	3
0.7 – 0.9	25	0.8	20	0.64	16
1.0 – 1.2	46	1.1	50.6	1.21	55.66
1.3 – 1.5	17	1.4	23.8	1.96	33.32
Jumlah Total	$\Sigma f = 100$		$\Sigma fx = 100.4$		$\Sigma fx^2 = 107.98$

$$\bar{x} = \frac{\Sigma fx}{\Sigma f} = \frac{100.4}{100}$$

Jadual 6
Table 6

$$s^2 = \frac{\Sigma fx^2}{\Sigma f} - \bar{x}^2$$

Antara berikut, yang manakah pengiraan varians yang betul bagi data tersebut?

Which of the following is the correct calculation of variance of the data?

A $\frac{107.98}{100.4} - \left(\frac{107.98}{100}\right)^2$

B $\frac{107.98}{100.4} - \left(\frac{100.4}{100}\right)^2$

C $\frac{107.98}{100} - \left(\frac{107.98}{100}\right)^2$

D $\frac{107.98}{100} - \left(\frac{100.4}{100}\right)^2$

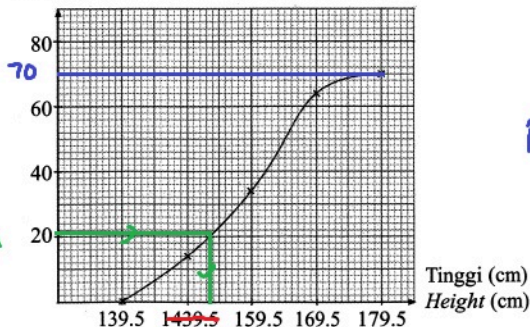
$$= \frac{107.98}{100} - \left(\frac{100.4}{100}\right)^2$$

40 Rajah 17 ialah sebuah ogif yang menunjukkan
 F5 tinggi, dalam cm, bagi 70 orang murid.

C7 Diagram 17 is an ogive that shows the height, in cm, of
 70 students.

Kekerapan longgakan
 Cumulative frequency

Tinggi Murid
 Student's Height



Rajah 17
 Diagram 17

Cari nilai bagi persentil ke-30.

Find the value of the 30th percentile.

- A 153.5 B 156.5
 C 157.5 D 161.5