

Jawab semua soalan
Answer all questions

1. Cari nilai berikut:
Find the value of:

$$5(-3 + 10) + \frac{3}{4} \div 0.2$$

- A 35.55
- B 38.75
- C 65.55
- D 68.75

2. Rajah 1 menunjukkan satu jujukan nombor. Apakah pola bagi jujukan nombor itu?
Diagram 1 shows a sequence of numbers. What is the pattern of the sequence of numbers?

$-6.8, -3.3, 0.2, 3.7, 7.2,$

Rajah 1 / Diagram 1

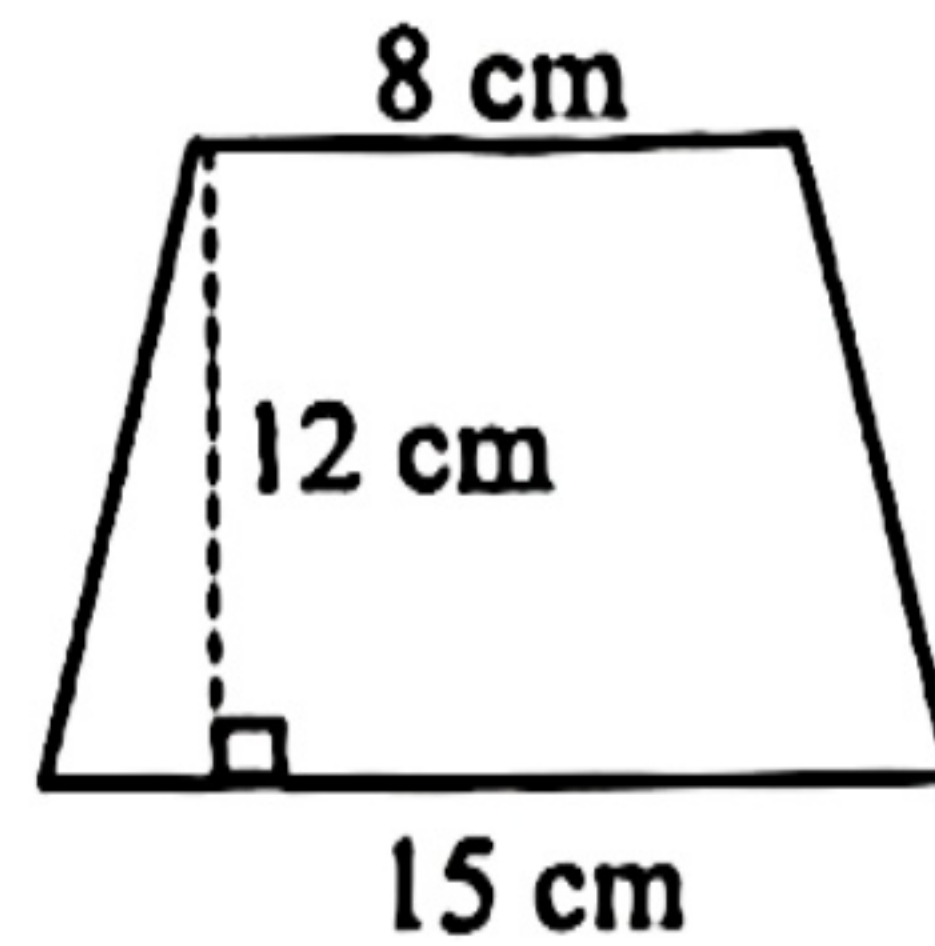
- A Tambah 2.5 kepada nombor sebelumnya
Add 2.5 to the previous number
- B Tolak nombor sebelumnya dengan 2.5
Subtract the previous number by 2.5
- C Tambah 3.5 kepada nombor sebelumnya
Add 3.5 to the previous number
- D Tolak nombor sebelumnya dengan 3.5
Subtract the previous number by 3.5

3. / Jika $y^6 \times y^{-a} = y^7$, maka $a =$
If $y^6 \times y^{-a} = y^7$, then $a =$

- A -1
- B 0
- C 1
- D 2

4. Rajah 2 berikut menunjukkan sebuah trapezium.

Diagram 2 shows a trapezium.



Rajah 2 / Diagram 2

Hitung luas, dalam m^2 , trapezium itu dalam bentuk piawai.

Calculate the area, in m^2 , of the trapezium in standard form.

- A 1.38×10^{-2}
- B 1.38×10^2
- C 2.76×10^{-2}
- D 2.76×10^2
5. $14506_9 =$
- A $(1 \times 9^3) + (4 \times 9^2) + (5 \times 9^1) + (6 \times 9^0)$
- B $(1 \times 9^4) + (4 \times 9^3) + (5 \times 9^1) + (6 \times 9^0)$
- C $(1 \times 9^4) + (4 \times 9^3) + (5 \times 9^2) + (6 \times 9^1)$
- D $(1 \times 9^4) + (4 \times 9^3) + (5 \times 9^2) + (6 \times 9^0)$
6. Dalam suatu kuiz, Faiz memperoleh 340_7 mata, 351_7 mata, 336_7 mata dan 342_7 mata. Berapakah hasil tambah dua skor yang paling rendah?
In a quiz, Faiz obtained 340_7 points, 351_7 points, 336_7 points dan 342_7 points. What is the sum of the two lowest scores?
- A 1002_7
- B 1006_7
- C 1012_7
- D 1023_7

- 7 Jadual 1 menunjukkan simpanan Salmi dalam satu akaun simpanan tetap.

Table 1 shows Salmi's savings in a fixed deposit account.

Jumlah simpanan/ Total savings	RM16 000
Tempoh/ Period	3 tahun / 3 years
Kadar faedah/ Interest rate	4.2% setahun/ per annum

Jadual 1 / Table 1

Hitung perbezaan dalam faedah jika Salmi ditawarkan faedah kompaun yang dikompaunkan setiap 6 bulan berbanding dengan faedah mudah.

Calculate the difference in interest earned if Salmi is offered compound interest compounded once every 6 months as compared to simple interest.

- A RM108.85
- B RM115.25
- C RM130.95
- D RM138.85

8. Jadual 2 di bawah menunjukkan harga makanan dan kuantiti yang dipesan oleh Subra.

Table 2 shows the food prices and quantities ordered by Subra.

Makanan dan minuman <i>Food and drink</i>	Harga <i>Price</i>	Kuantiti <i>Quantity</i>
Roti/ Bread	RM5.80	1
Kek/ Cake	RM7.20	1
Jus/ Juice	RM4.50	2

Jadual 2 / Table 2

Cukai perkhidmatan 6% adalah termasuk dalam bil Subra. Hitung bil Subra.

6% service tax is included in the bill. Calculate Subra's bill.

- A RM17.50
- B RM18.55
- C RM23.32
- D RM24.50

9. Lily telah menerima pampasan daripada syarikat insurans keretanya sebanyak RM1490. Jika polisi insuransnya itu mempunyai deduktibel sebanyak RM500, hitung jumlah sebenar kerugian yang dialami oleh Lily.

Lily had received a compensation of RM1 490 from her car's insurance company. If her insurance policy has a deductible of RM500, calculate the actual loss suffered by Lily.

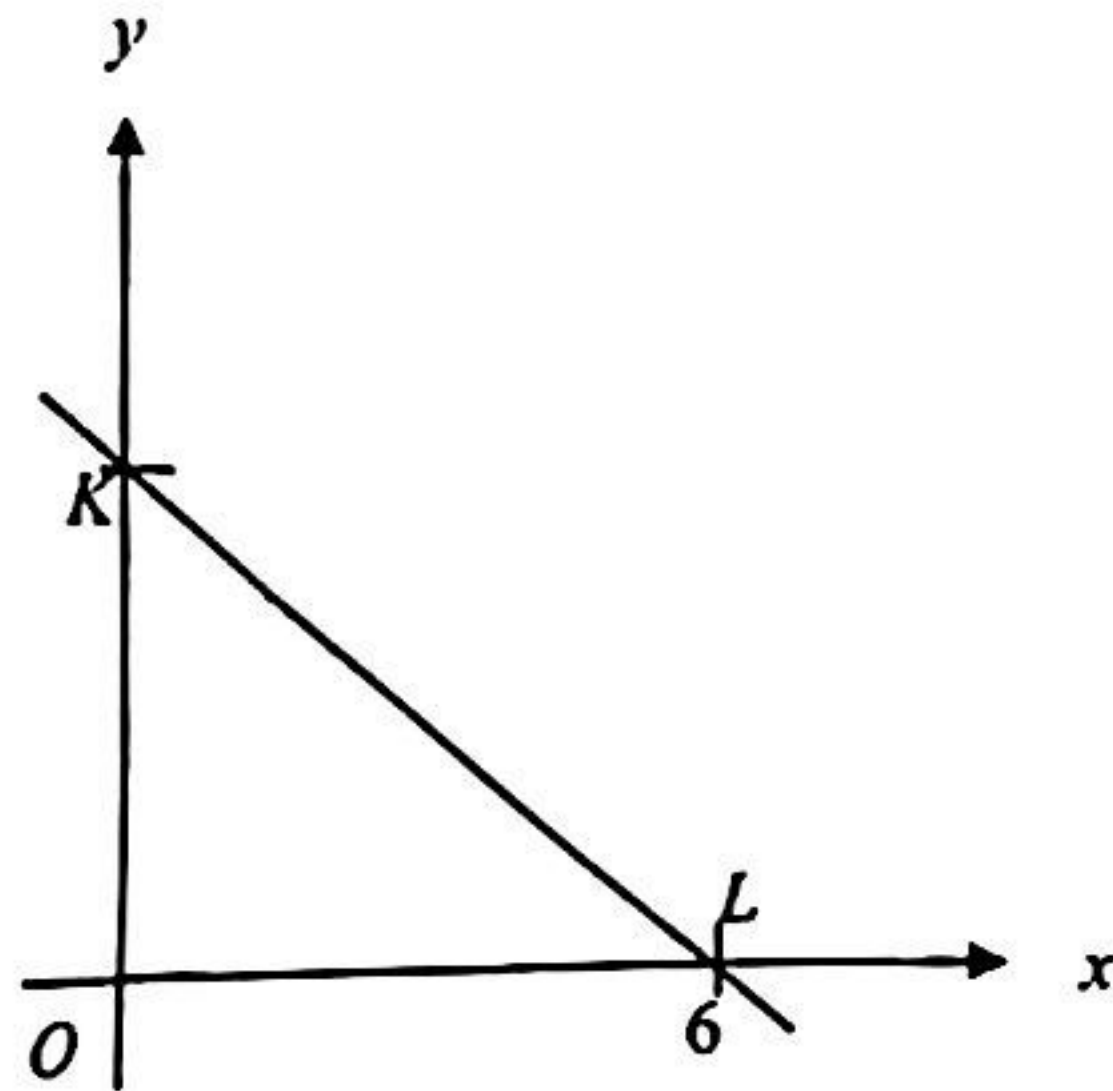
- A RM990
 B RM1 090
 C RM1 440
 D RM1 990
10. Faktorkan $9x^2 - 36$
Factorise $9x^2 - 36$
- A $3x - 6$
 B $3x^2 - 6$
 C $(3x - 6)(3x + 6)$
 D $(3x - 6)(3x - 6)$

11. Diberi bahawa $4 - \frac{1}{r} = 2s$. Ungkapkan r dalam sebutan s .

Given $4 - \frac{1}{r} = 2s$. Express r in terms of s .

- A $r = \frac{4}{2s}$
 B $r = \frac{1}{4 - 2s}$
 C $r = \frac{1}{4 + 2s}$
 D $r = \frac{4}{2s}$

12. Rajah 3 menunjukkan garis lurus KL pada suatu satah Cartes.
Diagram 3 shows a straight line KL on a Cartesian plane.



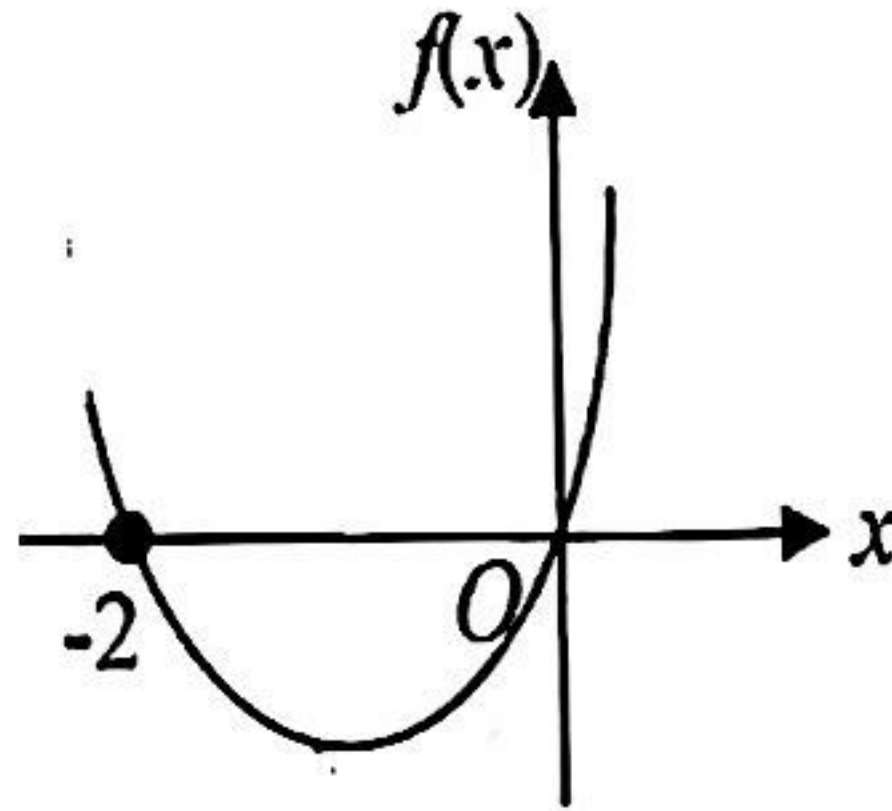
Rajah 3/ Diagram 3

Diberi bahawa $OL = 2 OK$. Cari kecerunan garis lurus KL .
It is given $OL = 2 OK$. Find the gradient of straight line KL .

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

13. Rajah 4 menunjukkan graf fungsi kuadratik bagi $f(x) = x^2 + 2x$. Antara berikut, manakah menunjukkan titik minimum bagi graf fungsi kuadratik tersebut?

Diagram 4 shows the quadratic function graph $f(x) = x^2 + 2x$. Which of the following shows that the minimum point of quadratic function graph?



Rajah 4/ Diagram 4

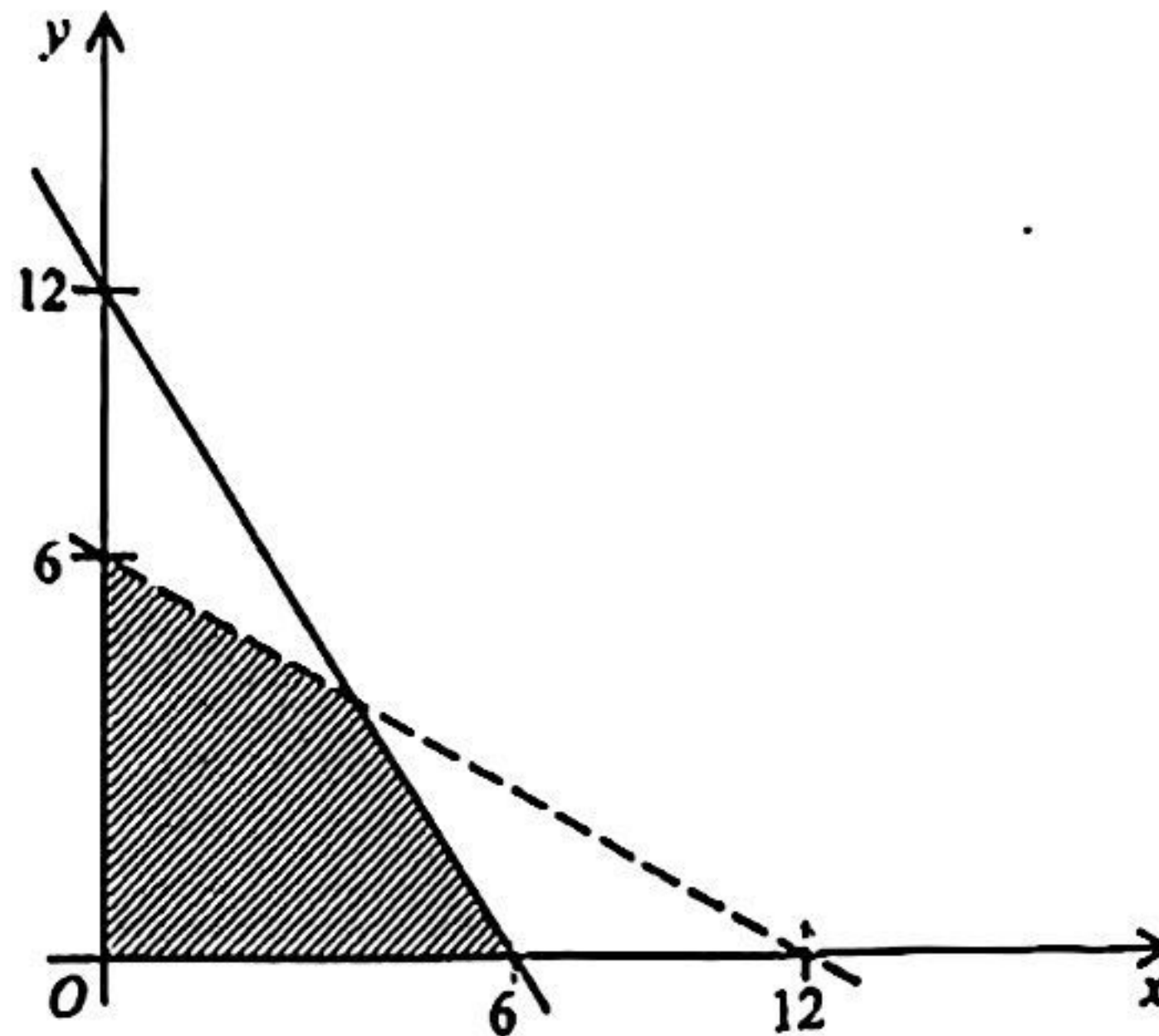
- A $(-1, -1)$
 B $(1, 1)$
 C $(1, -1)$
 D $(-1; 1)$
14. Antara ketaksamaan berikut, yang manakah mempunyai titik $(1, 4)$ sebagai suatu penyelesaian?

Which of the following inequality has a point $(1, 4)$ as a solution?

- A $4x + 3y < 16$
 B $4x + 3y < 5$
 C $4x + 3y \leq 16$
 D $4x + 3y \leq -5$

15. Rajah 5 menunjukkan suatu rantau berlorek yang ditakrifkan oleh suatu sistem ketaksamaan linear.

Diagram 5 shows a shaded region defined by a system of linear inequalities.



Rajah 5 / Diagram 5

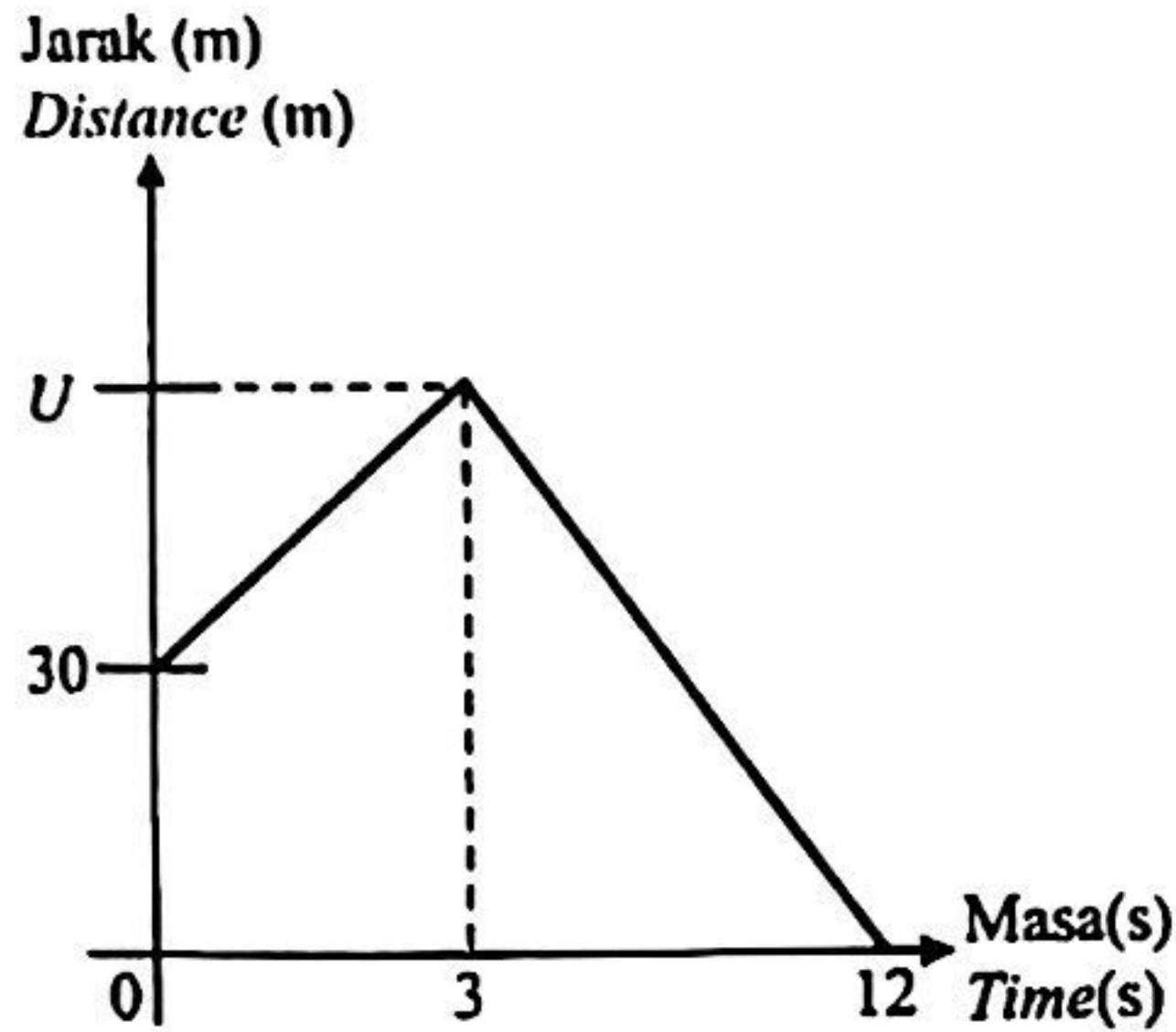
Antara berikut, manakah ketaksamaan yang mewakili rantau berlorek, selain daripada $x \geq 0$ dan $y \geq 0$?

Which of the following inequalities that represent the shaded region other than $x \geq 0$ and $y \geq 0$?

- A $2y \leq x + 12$, $y < 2x + 12$
- B $2y < -x + 12$, $y \leq -2x + 12$
- C $2y > -x + 12$, $y \geq 2x + 12$
- D $2y \geq x + 12$, $y > 2x + 12$

16. Rajah 6 menunjukkan graf jarak-masa bagi sebuah kereta dalam tempoh 12 saat.

Diagram 6 shows a distance-time graph of a car in a period of 12 seconds.



Rajah 6 / Diagram 6

Diberi bahawa kadar perubahan jarak dalam tempoh 9 saat terakhir ialah 12 ms^{-1} , cari nilai U .

Given the rate of change of distance for the last 9 seconds is 12 ms^{-1} , find the value of U .

- A 108
B 180
C 60
D 66
17. Diberi P berubah secara songsang dengan punca kuasa tiga Q . Jika $P = 2$ apabila $Q = 27$, hitung nilai Q jika $P = 12$.

It is given that P changes inversely with the cube root of Q . If $P = 2$ when $Q = 27$, calculate the value of Q if $P = 12$.

- A $\frac{1}{2}$
B 2
C $\frac{1}{8}$
D 8

18. Diberi bahawa $GH^3 = k$, dengan keadaan k ialah suatu pemalar. Antara pernyataan berikut, yang manakah benar?

Given $GH^3 = k$, such that k is a constant. Which of the following statements is true?

- A G berubah secara langsung dengan kuasa tiga H .
 G varies directly as cube of H .
- B G berubah secara langsung dengan punca kuasa tiga H .
 G varies directly as cube root of H .
- C G berubah secara songsang dengan kuasa tiga H .
 G varies inversely as cube of H .
- ✓ D G berubah secara songsang dengan punca kuasa tiga H .
 G varies inversely as cube root of H .

19. Syarikat Toy N Us mendapati bahawa jumlah mainan yang dijual, P , berubah secara langsung dengan kos iklan mereka, M , dan berubah secara songsang dengan harga setiap mainan, L . Jika RM30 000 dibelanjakan untuk iklan dan harga mainan berharga RM75, maka 1 500 unit mainan telah dijual. Hitung jumlah mainan yang dijual sekiranya jumlah kos iklan dan harga mainan dinaikkan masing-masing menjadi RM50 000 dan RM100.

Toy N Us company found that the number of toys sold, P , varies directly as their advertising cost, M , and inversely as the price of each toy, L . If RM30 000 was spent on advertising and the price of the toys was RM75, then 1 500 units toys have been sold. Calculate the number of toys sold if the total cost of advertising and the price of toys are increased to RM50 000 and RM100 respectively.

- A 2 875
- B 2 000
- C 1 800
- ✓ D 1 875

20. Diberi bahawa $2Y - \begin{pmatrix} 2 & 6 \\ -4 & 3 \end{pmatrix} = \begin{pmatrix} 4 & 6 \\ 8 & 11 \end{pmatrix}$. Cari matriks Y .

It is given that $2Y - \begin{pmatrix} 2 & 6 \\ -4 & 3 \end{pmatrix} = \begin{pmatrix} 4 & 6 \\ 8 & 11 \end{pmatrix}$. Find matrix Y .

- A $\begin{pmatrix} 3 & 6 \\ 6 & 7 \end{pmatrix}$
 B $\begin{pmatrix} 1 & 6 \\ 2 & 4 \end{pmatrix}$
 C $\begin{pmatrix} 6 & 0 \\ 12 & 13 \end{pmatrix}$
 D $\begin{pmatrix} 3 & 6 \\ 2 & 7 \end{pmatrix}$

21. Cari nilai x dan y bagi persamaan matriks berikut.
Find the value of x and y of the following matrix.

$$\begin{pmatrix} 2x & y+2 \\ -1 & 1 \end{pmatrix} \begin{pmatrix} 1 & 0 \\ x & 3 \end{pmatrix} = \begin{pmatrix} 70 & 15 \\ 9 & 3 \end{pmatrix}$$

- A $x = 10, y = 3$
 B $x = 3, y = 10$
 C $x = -10, y = -3$
 D $x = -3, y = -10$

22. Rajah 7 menunjukkan Abu memandang ke arah puncak pokok, P dan kemudian memandang ke arah kaki pokok, Q .
The diagram 7 shows Abu looking towards the top of the tree, P and then looking the foot of the tree, Q .



Rajah 7 / Diagram 7

Abu berdiri 10 m dari pokok itu. Sudut dongak P dari arah mata Abu ialah 44° . Sudut tunduk Q dari arah mata Abu ialah 7° . Cari ketinggian pokok itu.

Abu is standing 10 m from the tree. The angle of elevation P from the direction of Abu's eyes is 44° . The angle of depression, Q of Abu's eyes is 7° . find the height of the tree.

- A 1.22 m
- B 8.44 m
- C 9.66 m
- D 10.88 m

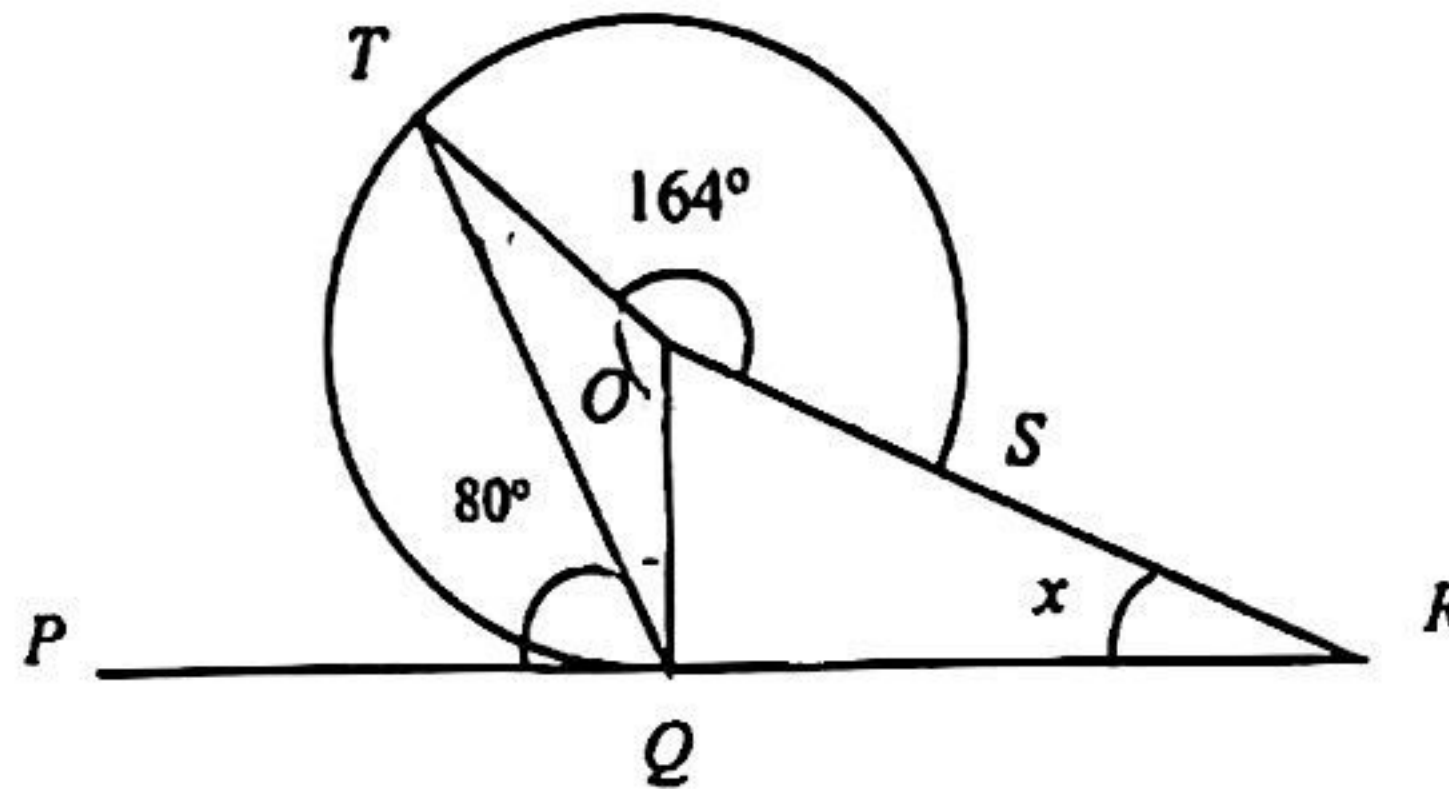
23. Isipadu sebuah tangki berbentuk silinder ialah $I = 700 \text{ m}^3$. Luas tapak tangki tersebut ialah $(4p-5) \text{ m}^2$ dan tingginya ialah $2p \text{ m}$. Hitung nilai sebenar tinggi tangki tersebut, dalam m.

The volume of a cylindrical tank is $I = 700 \text{ m}^3$. The base area of the tank is $(4p-5) \text{ m}^2$ and the height is $2p \text{ m}$. Calculate the actual value of the height of the tank, in m.

- A 20
- B 87.5
- C 116.67
- D 175

24. Rajah 8 menunjukkan PQR ialah tangen kepada bulatan berpusat O , di titik Q . PQR ialah garis lurus.

Diagram 8 shows PQR is a tangent to the circle with a centre O , at point Q . PQR is a straight line.



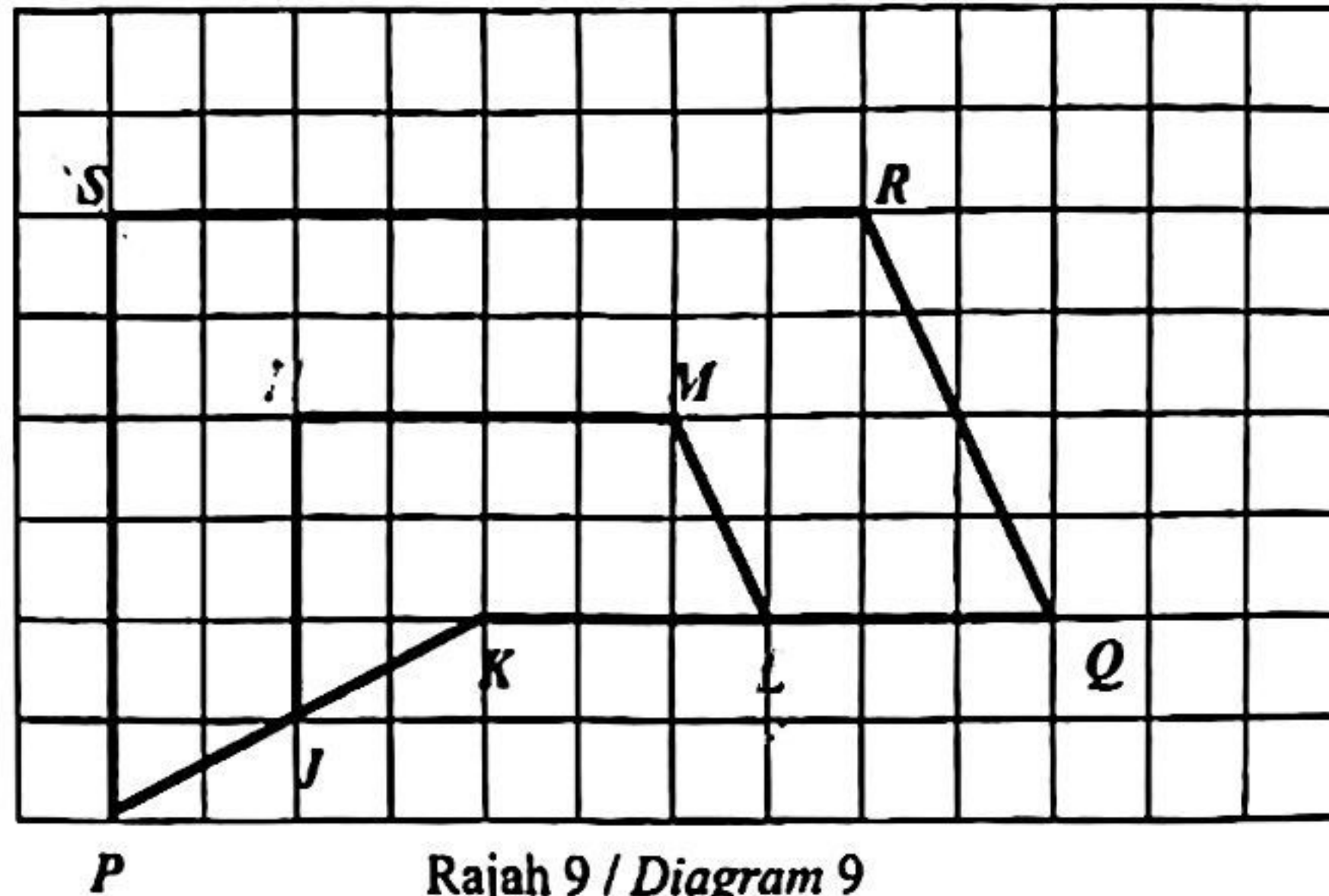
Rajah 8 / Diagram 8

Hitung nilai x .
Calculate the value of x .

- A 36
 B 44
 C 50
 D 54
25. Teselasi ialah pola bagi bentuk _____ yang memenuhi suatu satah tanpa ruang kosong atau pertindihan.
Tessellation is a pattern of _____ shape that fills a plane without leaving empty spaces or overlapping.
- A Berulang / recurring
 B Oktagon / octagon
 C Poligon / polygon
 D Berubah / shift

26. Rajah 9 menunjukkan pentagon $JKLMN$ di mana ialah imej kepada pentagon $PKQRS$ di bawah suatu pembesaran dengan faktor skala k .

Diagram 9 shows pentagon $JKLMN$ is the image of pentagon $PKQRS$ under enlargement with scale factor of k .



Rajah 9 / Diagram 9

Nyatakan nilai k .

State the value k .

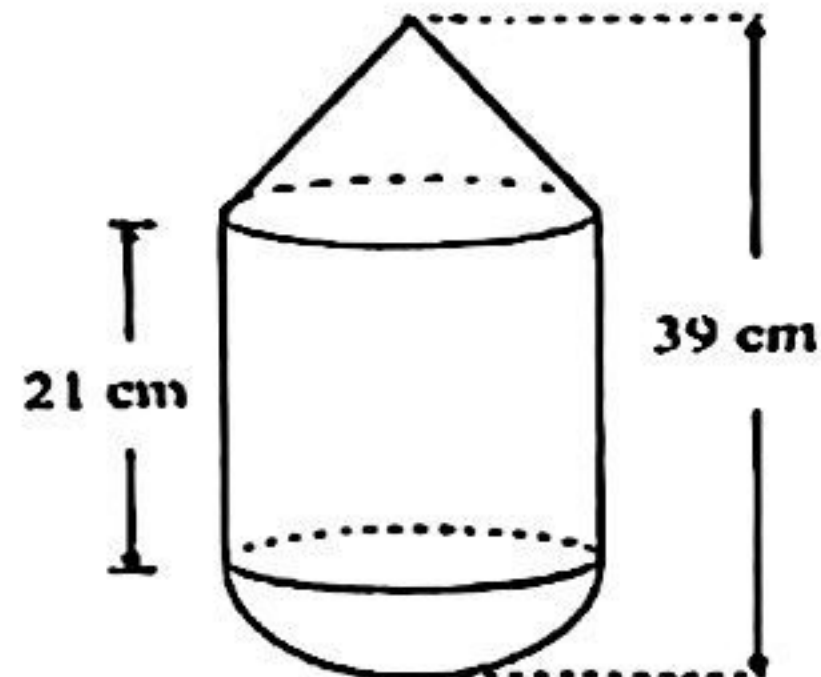
- A $-\frac{1}{2}$
 B $\frac{1}{2}$
 C -2
 D 2
27. Jika $\sin \theta = \frac{3}{5}$ dan $\tan \theta = \frac{24}{25}$. Cari nilai $\cos \theta$.
- If $\sin \theta = \frac{3}{5}$ and $\tan \theta = \frac{24}{25}$. Find the value of $\cos \theta$.*

- A $\frac{3}{8}$
 B $\frac{5}{8}$
 C $\frac{6}{8}$
 D $\frac{7}{8}$

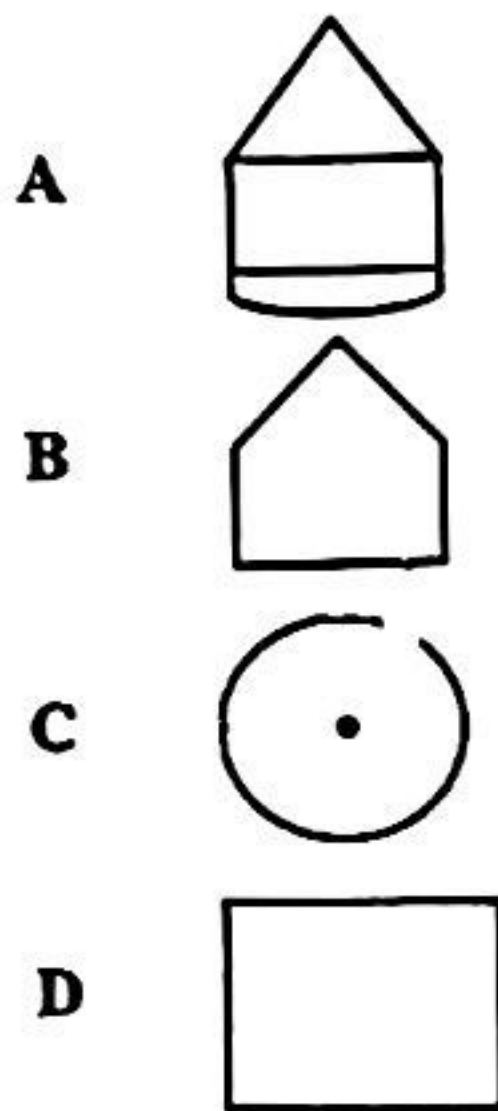


28. Rajah 10 menunjukkan suatu gabungan pepejal geometri. Antara berikut, yang manakah ialah pelan bagi gabungan pepejal tersebut?

Diagram 10 shows of combined solid geometry. Which of the following is the plan?



Rajah 10 / Diagram 10



29. Antara berikut yang manakah merupakan satu pernyataan?

Which of the following is a statement?

- A Apakah maksud pengiklanan?
What does advertising mean?
- B Faktor sepunya terbesar bagi 18 dan 27 ialah 9.
The greatest common factor of 18 and 27 is 9.
- C Pergi cuci tangan anda.
Go wash your hands.
- D $x + 3 = 5$

30. Lengkapi hujah deduktif berikut.

Complete the following deductive arguments.

Premis / Premise 1: _____

Premis / Premise 2: $\theta \neq 30^\circ$

Kesimpulan / Conclusion: $\tan \theta \neq \frac{1}{\sqrt{3}}$

A Jika $\theta = 30^\circ$, maka $\tan \theta = \frac{1}{\sqrt{3}}$

If $\theta = 30^\circ$, then $\tan \theta = \frac{1}{\sqrt{3}}$

B Jika $\theta \neq 30^\circ$, maka $\tan \theta \neq \frac{1}{\sqrt{3}}$

If $\theta \neq 30^\circ$, then $\tan \theta \neq \frac{1}{\sqrt{3}}$

C Jika $\tan \theta = \frac{1}{\sqrt{3}}$, maka $\theta = 30^\circ$

If $\tan \theta = \frac{1}{\sqrt{3}}$, then $\theta = 30^\circ$

D Jika $\tan \theta \neq \frac{1}{\sqrt{3}}$, maka $\theta \neq 30^\circ$

If $\tan \theta \neq \frac{1}{\sqrt{3}}$, then $\theta \neq 30^\circ$

31. Diberi set semesta, $\xi = \{x : x \text{ ialah integer, } 10 \leq x \leq 20\}$, set $M = \{x : x \text{ ialah nombor ganjil}\}$, set $N = \{x : x \text{ ialah nombor perdana}\}$ dan set $P = \{11, 14, 17, 19\}$. Senaraikan semua unsur bagi set $(M \cup P) \cap N$.

Given that universal set, $\xi = \{x : x \text{ is integer, } 10 \leq x \leq 20\}$, set $M = \{x : x \text{ is an odd number}\}$, set $N = \{x : x \text{ is prime number}\}$ and set $P = \{11, 14, 17, 19\}$. List all the elements of the set $(M \cup P) \cap N$.

A $\{11, 15, 17, 19\}$

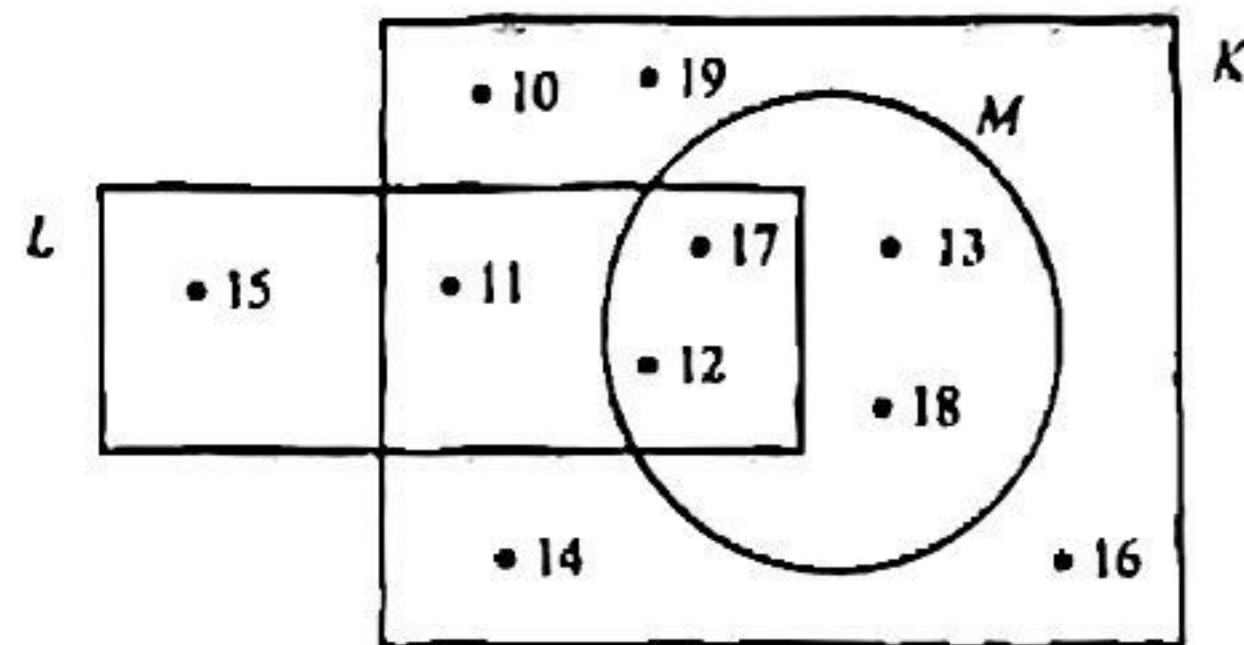
B $\{11, 14, 17, 19\}$

C $\{11, 13, 17, 19\}$

D $\{11, 12, 17, 19\}$

32. Gambar rajah Venn di bawah menunjukkan set K , set L dan set M dengan keadaan set semesta, $\xi = \{10, 11, 12, 13, 14, 15, 16, 17, 18, 19\}$.

Venn diagram below show that set K , set L and set M with states of the universal set, $\xi = \{10, 11, 12, 13, 14, 15, 16, 17, 18, 19\}$.



Berapakah bilangan unsur bagi persilangan set $K \cap L \cap M$.

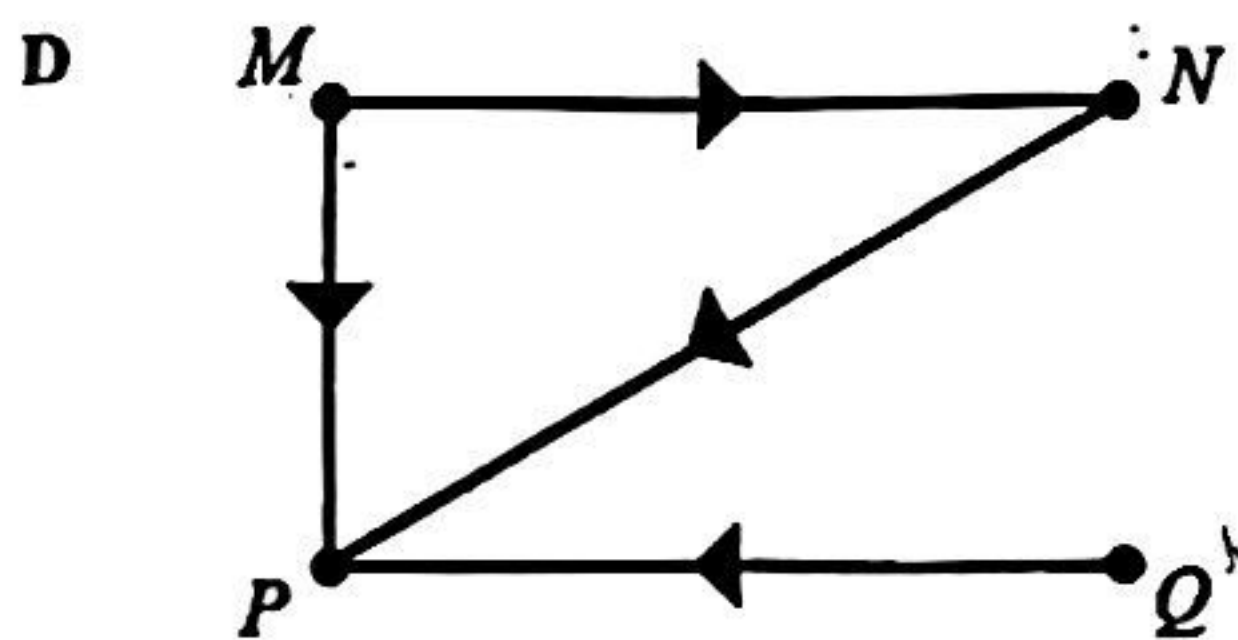
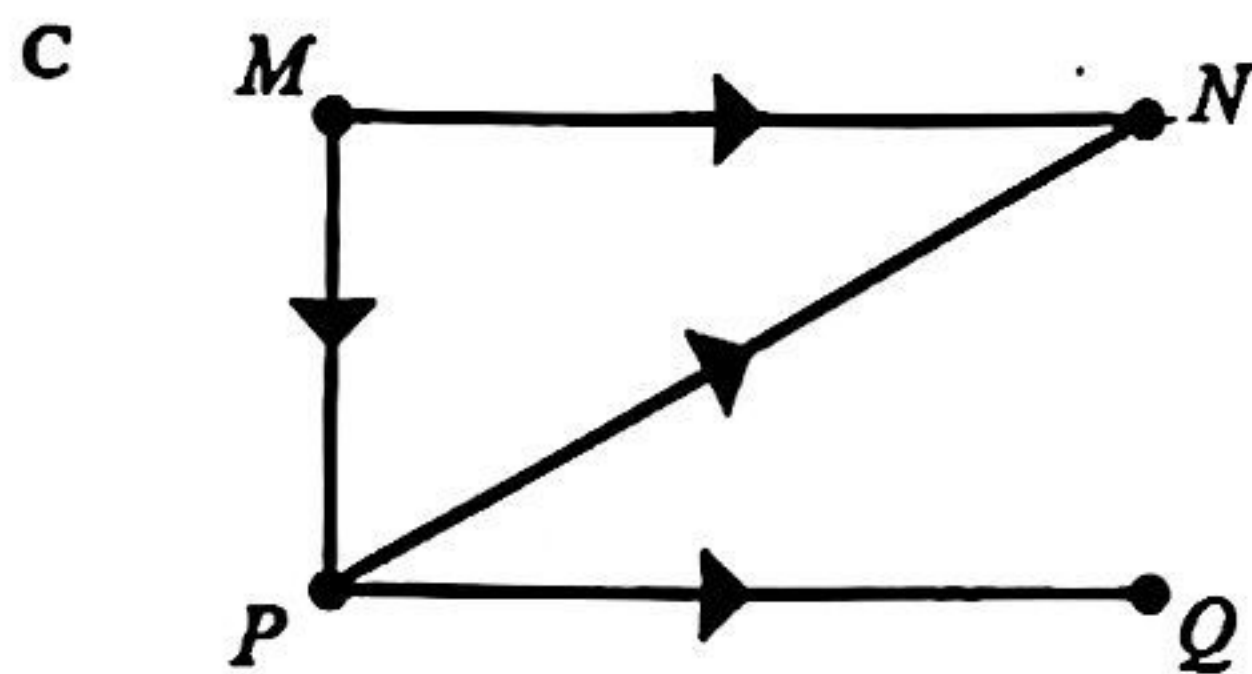
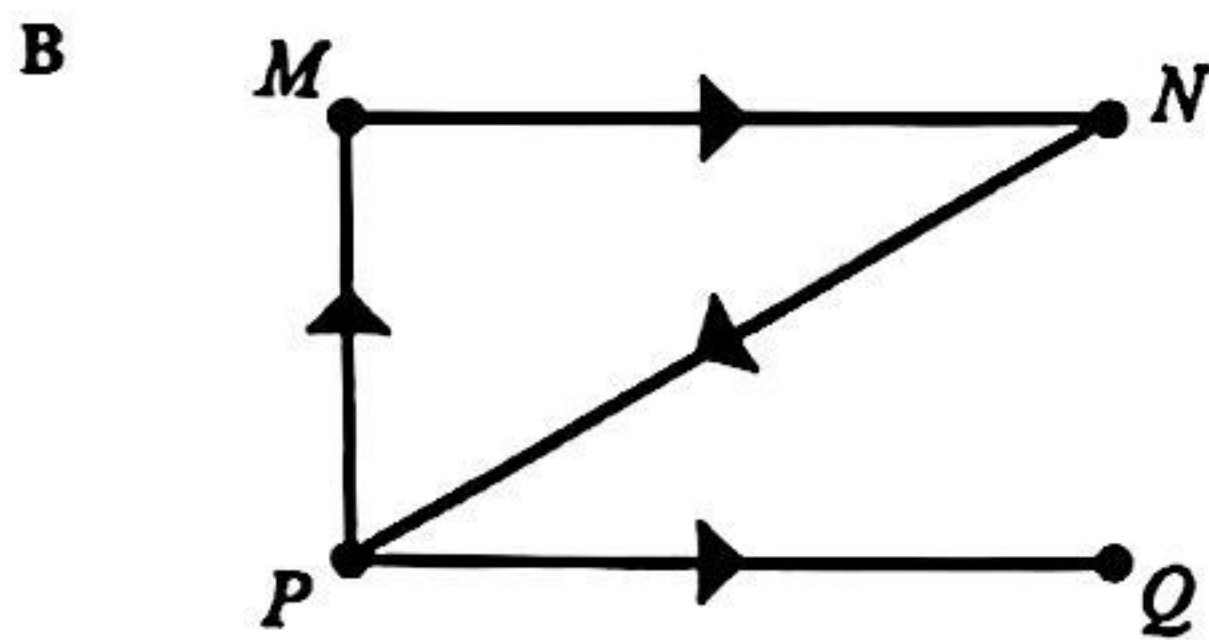
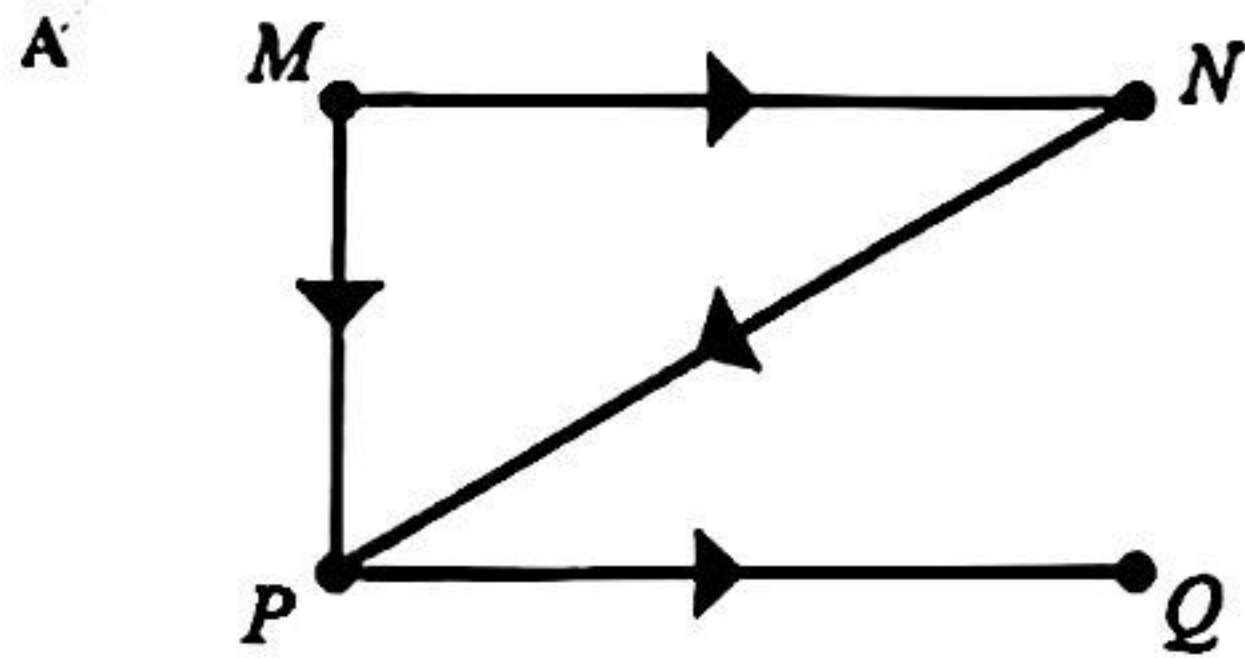
What is the number of elements of the intersection of the set $K \cap L \cap M$.

- A 1
- B 2
- C 3
- D 4

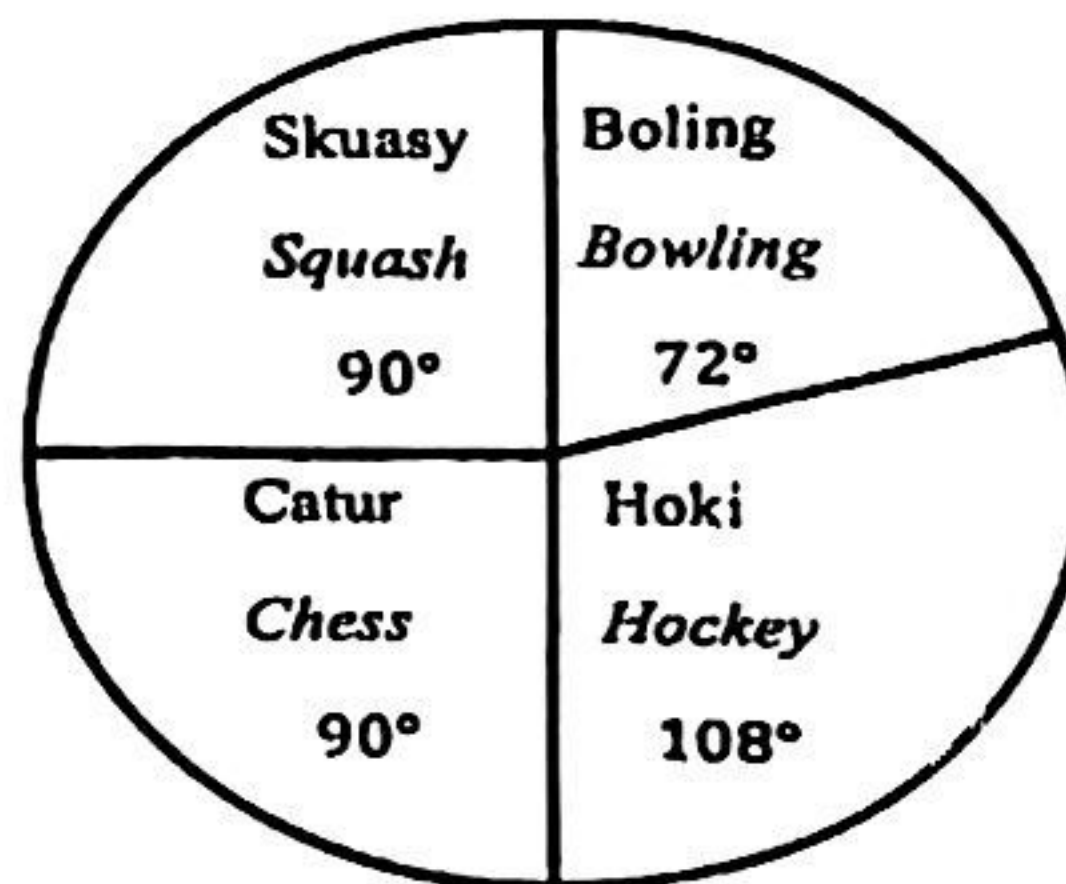
33. Manakah graf terarah yang paling sesuai berdasarkan maklumat di bawah?
Which directed graph is most appropriate based on the information below?

$$V = \{M, N, P, Q\}$$

$$E = \{(M, N), (M, P), (N, P), (P, Q)\}$$



34. Rajah 11 di bawah menunjukkan maklumat sukan kegemaran dalam sebuah sekolah.
Diagram 11 below shows the favourites sports information in a school.



Rajah 11 / Diagram 11

Hitung bilangan murid yang menggemari sukan skuasy dan hoki jika jumlah murid di sekolah tersebut adalah 580 orang murid.

Calculate the number of students who like squash and hockey if the total number of students in the school is 580 students.

- A 116
 B 145
 C 174
 D 319
35. Hitung varians bagi set data di bawah.
Calculate the variance of the data set below.

3, 6, 10, 13, 15, 15, 17

- A 10.667
 B 24.215
 C 11.286
 D 23.055

36. Kebarangkalian Encik Ali membeli sebuah telefon bimbit baru adalah $\frac{5}{7}$. Hitung kebarangkalian bahawa Encik Ali tidak membeli telefon bimbit tersebut.

The probability of Mr. Ali buying a new mobile phone is $\frac{5}{7}$. Calculate the probability that Mr. Ali did not buy the mobile phone.

- A $\frac{1}{7}$
- B $\frac{2}{7}$
- C $\frac{3}{7}$
- D $\frac{4}{7}$

37. Sebuah kelas terdiri daripada empat orang rumah sukan merah, lapan orang rumah sukan biru dan sembilan orang rumah sukan hijau. Dua orang murid dipilih secara rawak dari kelas tersebut. Hitung kebarangkalian murid yang dipilih adalah daripada rumah sukan yang berbeza.

A class consists of four red sports houses, eight blue sports houses and nine green sports houses. Two students are randomly selected from the class. Calculate the probability that the selected students are from different sports houses.

- A $\frac{1}{35}$
- B $\frac{1}{3}$
- C $\frac{2}{3}$
- D $\frac{6}{35}$

38. Jadual 3 menunjukkan satu set data yang diperolehi dari suatu kajian bagi 100 orang responden berkaitan sukan yang digemari.

Table 3 shows a set of data obtained from a study for 100 respondents related to favorite sports.

Sukan Sports	Bilangan Numbers
Bola Sepak <i>Football</i>	60
Ragbi <i>Rugby</i>	45
Sepak Takraw <i>Sepak Takraw</i>	54
Sepak Takraw dan Bola Sepak sahaja <i>Sepak Takraw and Football only</i>	22
Bola sepak dan Ragbi sahaja <i>Football and Rugby only</i>	11
Ragbi sahaja <i>Rugby only</i>	15
Bola sepak sahaja <i>Football only</i>	20

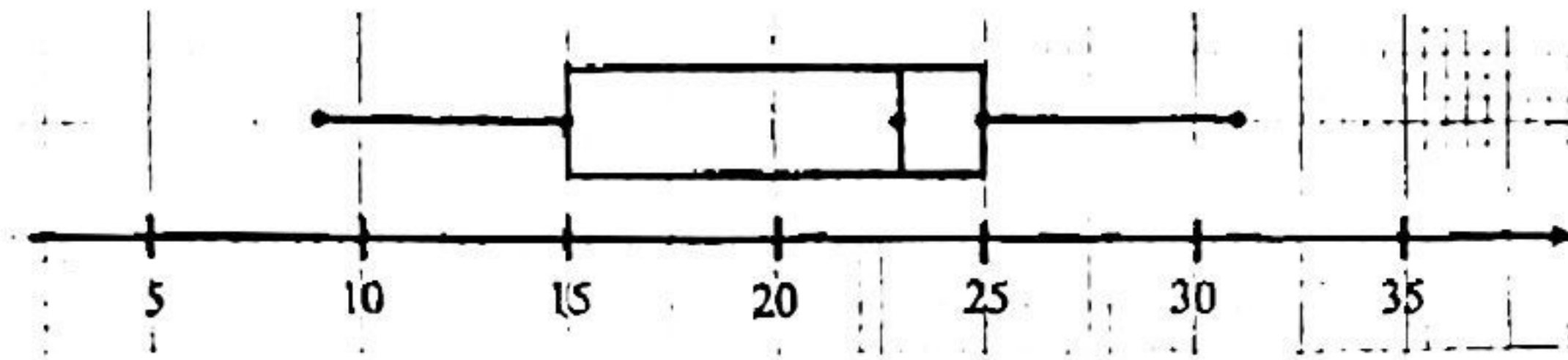
Jadual 3 / Table 3

Hitungkan bilangan yang hanya suka satu sukan sahaja jika terdapat responden yang menggemari ketiga-tiga sukan.

Calculate the number who like only one sport if there are respondents who like all three sports.

- A** 48
- B** 45
- C** 35
- D** 13

39. Rajah 12 menunjukkan maklumat yang terdapat pada plot kotak.
Diagram 12 shows the information available on the box plot.

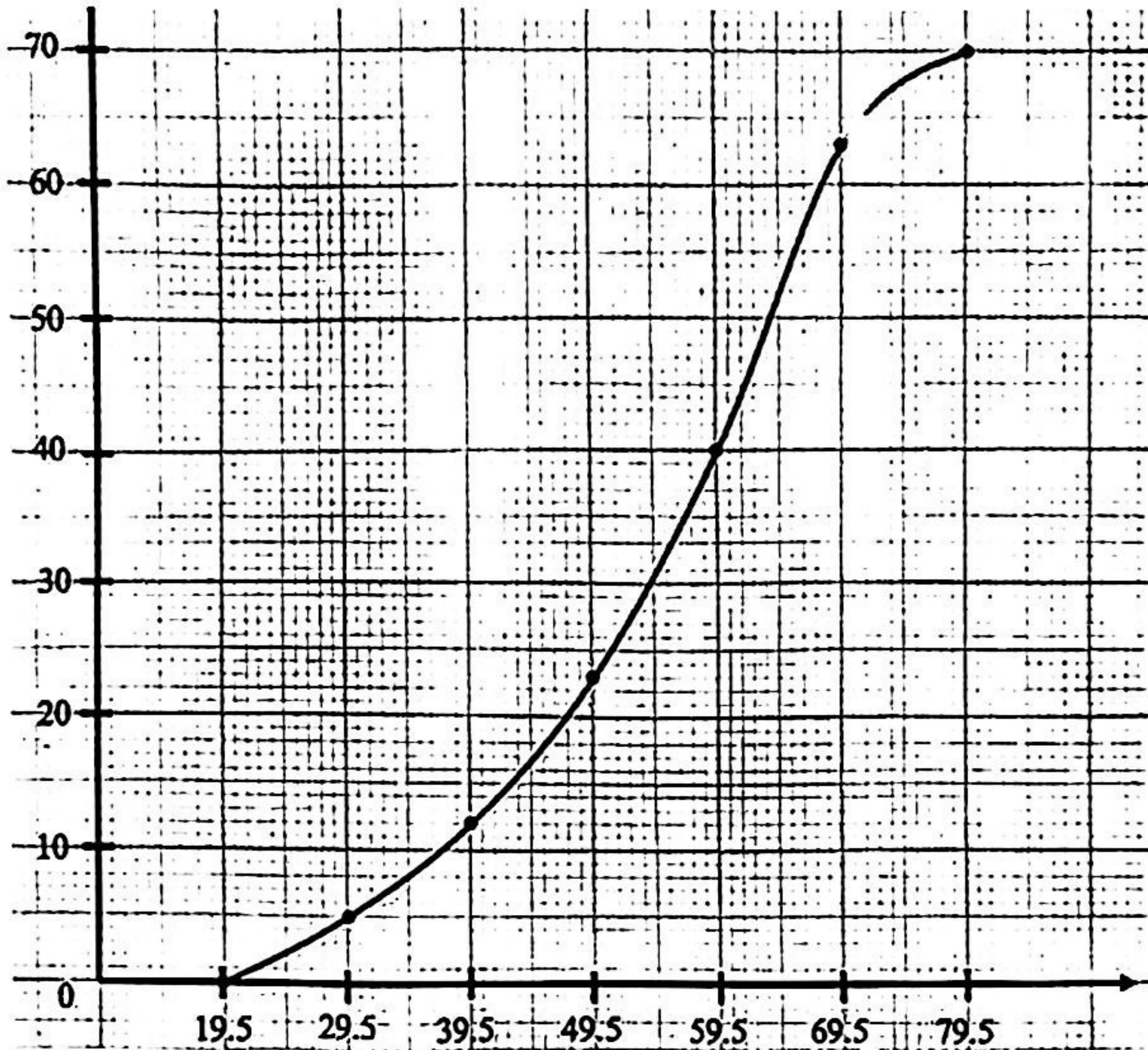


Rajah 12 / Diagram 12

Hitungkan julat antara kuartil bagi plot kotak tersebut.
Calculate the interquartile range for the box plot.

- A 8
- B 10
- C 16
- D 22

40. Rajah 13 menunjukkan ogif bagi kandungan gula yang diambil oleh 70 orang dewasa.
 Diagram 13 shows the ogive of sugar content taken by 70 adults.



Rajah 13 / Diagram 13

Hitung hasil tolak antara persentil ke-20 dan persentil ke-70 bagi ogif tersebut.
 Calculate the subtraction between the 20th percentile and the 70th percentile for the ogive.

- A 8
- B 10
- C 22
- D 32

KERTAS SOALAN TAMAT
END OF QUESTION PAPER