

Jawab **semua** soalan.

Answer **all** questions.

1. Banding dan susun nombor yang berikut mengikut tertib menurun.  
*Compare and arrange the following numbers in descending order.*

$$\frac{1}{12}, -\frac{1}{3}, 1\frac{3}{4}, -\frac{5}{6}, \frac{1}{2}$$

- A  $-\frac{5}{6}, -\frac{1}{3}, \frac{1}{12}, \frac{1}{2}, 1\frac{3}{4}$                       C  $1\frac{3}{4}, \frac{1}{2}, \frac{1}{12}, -\frac{1}{3}, -\frac{5}{6}$
- B  $-\frac{5}{6}, -\frac{1}{3}, 1\frac{3}{4}, \frac{1}{2}, \frac{1}{12}$                       D  $1\frac{3}{4}, \frac{1}{12}, \frac{1}{2}, -\frac{5}{6}, -\frac{1}{3}$

2. Antara nombor yang berikut, yang manakah ialah kuasa dua sempurna?  
*Which of the following numbers is a perfect square?*

- A 196  
B 343  
C 686  
D 729

3. Wakilkan nisbah 1.2 jam kepada 180 saat kepada 45 minit dalam bentuk  $a : b : c$ .  
*Represent the ratio of 1.2 hours to 180 seconds to 45 minutes in the form of  $a : b : c$ .*

- A 180 : 45 : 1.2  
B 62 : 3 : 45  
C 45 : 180 : 1.2  
D 24 : 1 : 15

4. Bundarkan 0.03904 betul kepada tiga angka bererti.  
*Round off 0.03904 correct to three significant figures.*

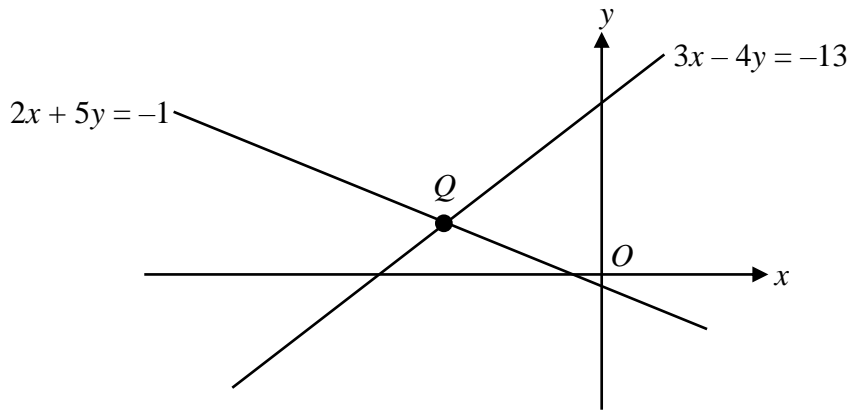
- A 0.04  
B 0.039  
C 0.0390  
D 0.0391

5. Ungkapkan 2710 dalam bentuk piawai.  
*Express 2710 in standard form.*

- A  $0.271 \times 10^4$   
B  $2.71 \times 10^3$   
C  $2.71 \times 10^{-3}$   
D  $0.271 \times 10^{-4}$

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6. Rajah 6 menunjukkan dua garis lurus yang bersilang pada titik  $Q$ .  
Diagram 6 shows two straight lines intersecting at point  $Q$ .



Rajah 6  
Diagram 6

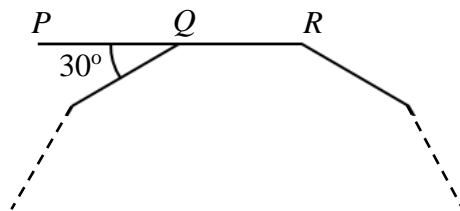
Diberi  $O$  ialah asalan, tentukan koordinat  $Q$ .

Given that  $O$  is the origin, determine the coordinates of  $Q$ .

- A  $(-6, 2)$
  - B  $(-4, 2)$
  - C  $(-3, 1)$
  - D  $(-2, 1)$
7. Antara set pasangan tertib berikut, yang manakah ialah **bukan** fungsi?  
Which of the following sets of ordered pair is **not** a function?

- A  $\{(2, 7), (3, 6), (2, 9), (5, 4)\}$
- B  $\{(2, 3), (3, 4), (4, 6), (8, 5)\}$
- C  $\{(1, 4), (0, 4), (2, 4), (4, 3)\}$
- D  $\{(3, 2), (4, 2), (5, 3), (6, 3)\}$

8. Rajah 8 menunjukkan sebuah poligon sekata yang tidak lengkap.  $PQR$  ialah garis lurus.  
Diagram 8 shows an incomplete regular polygon.  $PQR$  is a straight line.



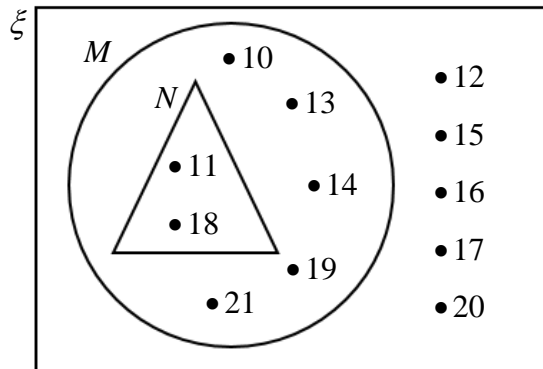
Rajah 8  
Diagram 8

Hitung bilangan sisi poligon sekata tersebut.

Calculate the number of sides of the regular polygon.

- A 9
- B 10
- C 11
- D 12

9. Rajah 9 menunjukkan gambar rajah Venn dengan set semesta  $\xi$ , set  $M$  dan set  $N$ .  
Diagram 9 shows the Venn diagram with the universal set  $\xi$ , set  $M$  and set  $N$ .



Rajah 9  
Diagram 9

Hitung kebarangkalian memilih peristiwa pelengkap,  $N'$ .

Calculate the probability of choosing  $P(N')$ .

- A  $\frac{11}{12}$
- B  $\frac{5}{6}$
- C  $\frac{5}{12}$
- D  $\frac{1}{6}$
10. Jadual 10 menunjukkan saiz kasut bagi 30 orang murid Tingkatan 2 Arif.  
Table 10 shows the shoe sizes for 30 students in Form 2 Arif.

Saiz kasut Shoe size	4	5	6	7	8
Bilangan murid Number of students	5	10	9	4	2

Jadual 10  
Table 10

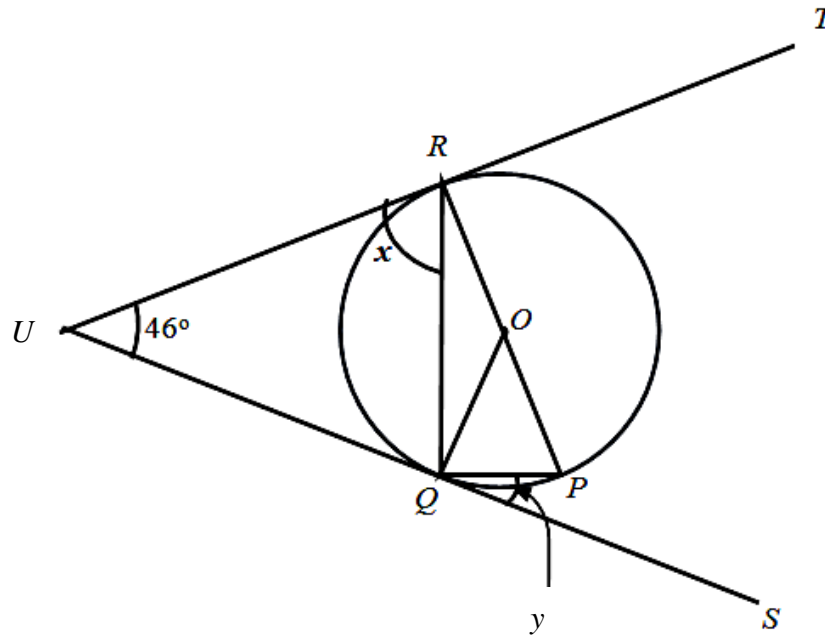
Tentukan median bagi saiz kasut bagi murid Tingkatan 2 Arif.

Determine the median of the shoe sizes for Form 2 Arif students.

- A 5.5
- B 6.0
- C 6.5
- D 7.0

11. Rajah 11 menunjukkan sebuah bulatan  $PQR$  dengan pusat  $O$ .  $SQU$  dan  $TRU$  masing-masing ialah tangen kepada bulatan pada titik  $Q$  dan  $R$ .

*Diagram 11 shows a circle  $PQR$  with centre  $O$ .  $SQU$  and  $TRU$  are tangents to the circle at points  $Q$  and  $R$  respectively.*



Rajah 11  
Diagram 11

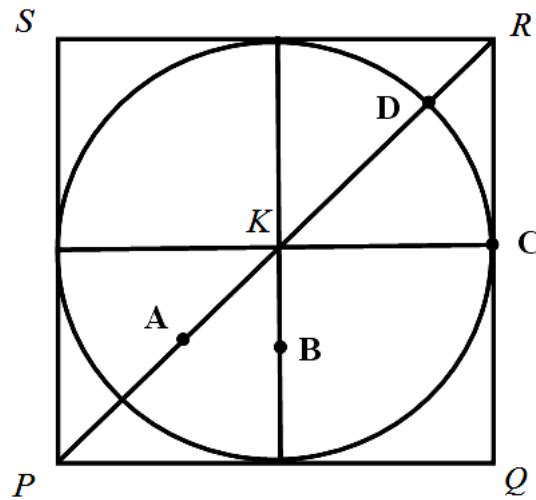
Cari nilai  $x$  dan  $y$ .

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

- A**  $x = 23^\circ$ ,  $y = 46^\circ$
- B**  $x = 60^\circ$ ,  $y = 32^\circ$
- C**  $x = 67^\circ$ ,  $y = 23^\circ$
- D**  $x = 70^\circ$ ,  $y = 20^\circ$

12. Rajah 12 menunjukkan sebuah bulatan dengan pusat  $K$  di dalam segi empat sama  $PQRS$  dengan sisi 4 cm.

*Diagram 12 shows a circle with centre  $K$  inside square  $PQRS$  with sides of 4 cm.*



Rajah 12  
Diagram 12

Lokus  $X$  ialah satu titik yang sentiasa bergerak 2 cm dari titik  $K$  dan lokus  $Y$  ialah satu titik yang sentiasa sama jarak daripada garis  $SR$  dan  $QR$ .

Antara titik-titik  $A$ ,  $B$ ,  $C$  dan  $D$ , yang manakah ialah titik persilangan bagi lokus  $X$  dan lokus  $Y$ ?

*Locus  $X$  is a point which is always moving 2 cm from point  $K$  and locus  $Y$  is a point which is always equidistant from the lines  $SR$  and  $QR$ .*

*Which of the points,  $A$ ,  $B$ ,  $C$  and  $D$ , is the intersection point of locus  $X$  and locus  $Y$ ?*

13. Apakah nilai digit 2, dalam asas sepuluh, bagi nombor  $4231_8$ ?  
*What is value of digit 2, in base ten, for the number  $4231_8$ ?*

- A** 16
- B** 128
- C** 256
- D** 1 024

14. Jadual 14 menunjukkan perbelanjaan Zamri pada bulan Januari.  
*Table 14 shows the expenses of Zamri in January.*

<b>Perbelanjaan</b> <i>Expenses</i>	<b>RM</b>
Makanan <i>Food</i>	500
Insurans <i>Insurance</i>	250
Petrol <i>Petrol</i>	400
Bil telefon <i>Telephone bill</i>	210
Ansuran kereta <i>Car instalment</i>	750

Jadual 14  
*Table 14*

Hitung jumlah perbelanjaan tidak tetap Zamri.  
*Calculate Zamri's total variable expenses.*

- A RM2 110  
 B RM1 360  
 C RM1 110  
 D RM900
15. Diberi bahawa  $3^{\frac{1}{4}} \div 3^{-k} = 3^{\frac{9}{4}}$ , hitung nilai  $k$ .  
*It is given that  $3^{\frac{1}{4}} \div 3^{-k} = 3^{\frac{9}{4}}$ , calculate the value of  $k$ .*
- A  $-\frac{5}{2}$   
 B  $-2$   
 C  $2$   
 D  $\frac{5}{2}$
16. Encik Razin mempunyai polisi insurans perubatan dengan peruntukan deduktibel sebanyak RM1 000 dan penyertaan peratusan ko-insurans 85/15 dalam polisinya. Baru-baru ini, dia menjalani pembedahan jantung dan bil perubatannya ialah RM120 000.  
 Berapakah kos bayaran yang ditanggung oleh syarikat insurans?  
*Mr. Razin has a medical insurance policy with a deductible allocation of RM1 000 and a 85/15 co-insurance percentage participation in his policy. Recently, he underwent a heart surgery and his medical bill was RM120 000.*  
*What is the cost of payment borne by the insurance company?*
- A RM18 850  
 B RM101 000  
 C RM101 150  
 D RM102 000

17. Encik Ong dan keluarganya menjamu selera di sebuah restoran. Diberi harga makanan tertakluk kepada cukai perkhidmatan sebanyak 6%. Jumlah bil ialah RM190.80 termasuk cukai perkhidmatan.

Hitung cukai perkhidmatan yang dibayar oleh Encik Ong.

*Mr. Ong and his family had a meal at a restaurant. Given that the price of food is subject to 6% of service tax. The total bill is RM190.80 including service tax.*

*Calculate the service tax paid by Mr. Ong.*

- A RM10.50
- B RM10.80
- C RM11.45
- D RM11.80

18.  $L$  berubah secara langsung dengan punca kuasa dua  $M$ . Nyatakan hubungan antara  $L$  dan  $M$ .  
 *$L$  varies directly as the square root of  $M$ . State the relationship between  $L$  and  $M$ .*

- |   |                             |   |                                       |
|---|-----------------------------|---|---------------------------------------|
| A | $L \propto M^{\frac{1}{2}}$ | C | $L \propto M^2$                       |
| B | $L \propto \frac{1}{M^2}$   | D | $L \propto \frac{1}{M^{\frac{1}{2}}}$ |

19. Syarikat Mr Toy mendapati bahawa jumlah mainan yang dijual,  $R$ , berubah secara langsung dengan kos iklan mereka,  $S$ , dan berubah secara songsang dengan harga setiap mainan,  $U$ . Jika RM54 000 dibelanjakan untuk iklan dan harga mainan berharga RM90, maka 9 600 unit mainan telah dijual.

Hitung jumlah mainan yang dijual sekiranya jumlah kos iklan dan harga mainan dinaikkan masing-masing menjadi RM144 000 dan RM100.

*Mr Toy company found that the number of toys sold,  $R$ , varies directly as their advertising cost,  $S$ , and inversely as the price of each toy,  $U$ . If RM54 000 was spent on advertising and the price of the toy was RM90, then 9 600 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 RM144 000 and RM100 respectively.*

- |   |        |   |        |
|---|--------|---|--------|
| A | 28 444 | C | 24 000 |
| B | 25 600 | D | 23 040 |

20.  $\begin{bmatrix} 4 & \frac{1}{3} \end{bmatrix} \begin{bmatrix} 0 & -3 \\ 12 & 6 \end{bmatrix} =$

- |   |   |   |   |
|---|---|---|---|
| A | $\begin{bmatrix} -12 \\ 2 \end{bmatrix}$          | C | $\begin{bmatrix} 8 & -14 \end{bmatrix}$ |
| B | $\begin{bmatrix} 4 \\ \frac{13}{3} \end{bmatrix}$ | D | $\begin{bmatrix} 4 & -10 \end{bmatrix}$ |

21. Diberi matriks songsang bagi  $\begin{bmatrix} 5 & -9 \\ 2 & -3 \end{bmatrix}$  ialah  $\frac{1}{p} \begin{bmatrix} -3 & 9 \\ q & 5 \end{bmatrix}$ . Cari nilai bagi  $p$  dan  $q$ .

Given that the inverse matrix of  $\begin{bmatrix} 5 & -9 \\ 2 & -3 \end{bmatrix}$  is  $\frac{1}{p} \begin{bmatrix} -3 & 9 \\ q & 5 \end{bmatrix}$ . Find the value of  $p$  and  $q$ .

- A  $p = 3, q = 2$
- B  $p = 3, q = -2$
- C  $p = 2, q = 3$
- D  $p = -3, q = 2$

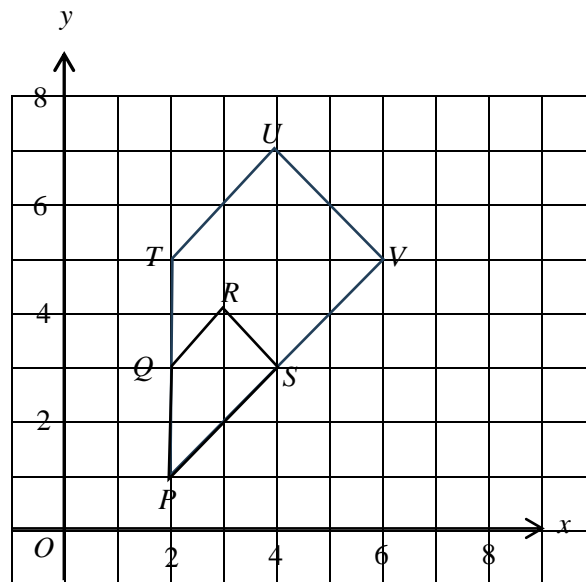
22. Antara berikut, titik manakah memuaskan ketaksamaan  $3y < x + 2$ .  
Which of the following satisfies linear inequality  $3y < x + 2$ .

- A  $(3, -2)$
- B  $(-2, 0)$
- C  $(-2, 3)$
- D  $(-3, 2)$

23. Ringkaskan  $4^6 \times (2^2)^4$ .  
Simplify  $4^6 \times (2^2)^4$ .

- A  $4^2$
- B  $4^{10}$
- C  $8^2$
- D  $8^{10}$

24. Rajah 24 menunjukkan dua buah trapezium  $PTUV$  dan  $PQRS$  yang dilukis pada satah Cartes.  
Diagram 24 shows two trapeziums,  $PTUV$  and  $PQRS$  drawn on the Cartesian plane.



Rajah 24  
Diagram 24

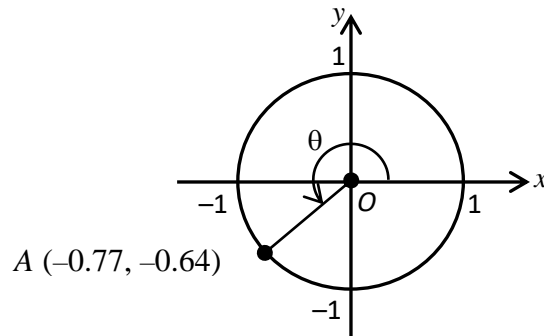
$PTUV$  ialah imej bagi  $PQRS$  dibawah suatu pembesaran. Cari faktor skala bagi pembesaran itu.  
 $PTUV$  is the image of  $PQRS$  under an enlargement. Find the scale factor of the enlargement.

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



25. Rajah 25 menunjukkan satu bulatan unit dengan  $0^\circ \leq \theta \leq 360^\circ$ .

Diagram 25 shows a unit circle with  $0^\circ \leq \theta \leq 360^\circ$ .



Rajah 25  
Diagram 25

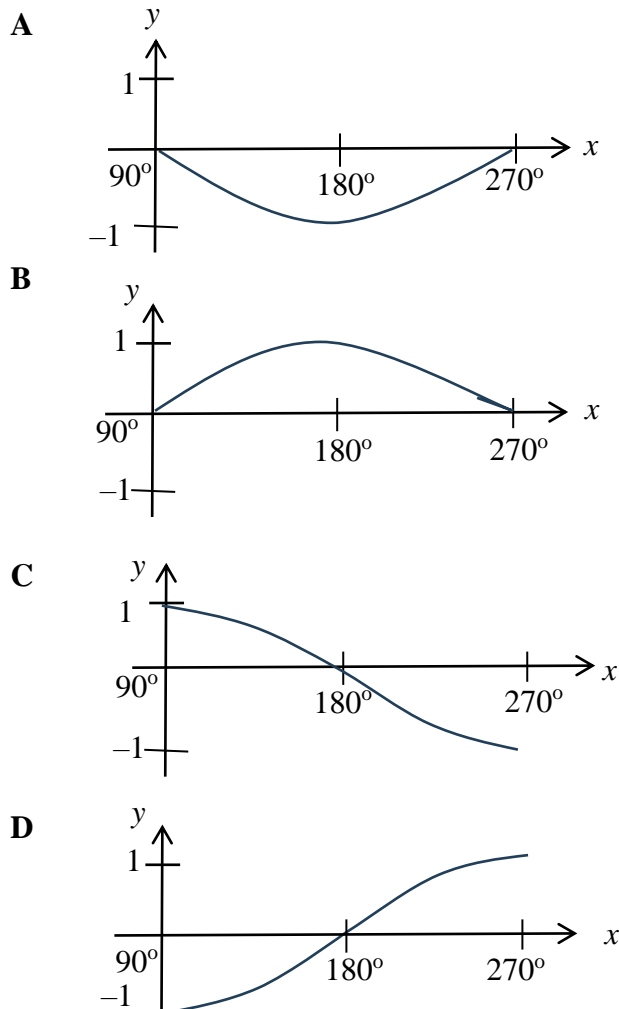
Cari nilai  $\sin \theta + \tan \theta$ .

Find the value of  $\sin \theta + \tan \theta$ .

- |          |      |          |       |
|----------|------|----------|-------|
| <b>A</b> | 0.19 | <b>C</b> | -1.41 |
| <b>B</b> | 0.06 | <b>D</b> | -1.47 |

26. Graf manakah yang mewakili  $y = \cos x$  bagi  $90^\circ \leq x \leq 270^\circ$ ?

Which graph represents  $y = \cos x$  for  $90^\circ \leq x \leq 270^\circ$ ?



27. Diberi  $y = \sqrt{\frac{1+x}{4}}$ , ungkapkan  $x$  dalam sebutan  $y$ .

Given that  $y = \sqrt{\frac{1+x}{4}}$ , express  $x$  in terms of  $y$ .

**A**  $x = 2y - 1$

**C**  $x = 2y^2 - 1$

**B**  $x = 4y - 1$

**D**  $x = 4y^2 - 1$

28. Suatu set data mengandungi enam nombor. Hasil tambah enam nombor ini ialah 45 dan hasil tambah kuasa dua bagi nombor-nombor ini ialah 373. Hitung varians bagi set data itu.

*A set of data contains six numbers. The sum of these six numbers is 45 and the sum of the squares of these numbers is 373. Calculate the variance of the set of data.*

**A** 4.917

**C** 6.917

**B** 5.917

**D** 7.917

29. Jadual 29 menunjukkan umur bagi untuk 20 orang peserta dalam satu acara maraton.

*Table 29 shows the age of 20 participants in a marathon race.*

Umur (Tahun) Age (Years)	20 – 24	25 – 29	30 – 34	35 – 39	40 – 44
Kekerapan Frequency	5	7	4	3	1

Jadual 29

Table 29

Hitungkan min anggaran umur, dalam tahun, peserta dalam acara maraton.

*Calculate the estimated mean age, in years, of the participants in the marathon race.*

**A** 34

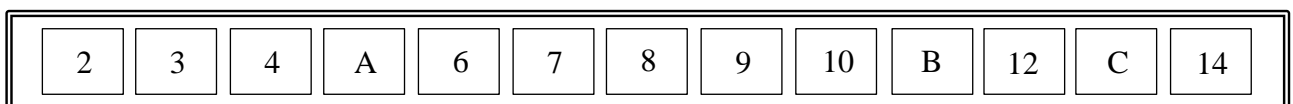
**C** 29

**B** 32

**D** 27

30. Rajah 30 menunjukkan sebilangan kad berlabel di dalam sebuah kotak. Dua keping kad dipilih secara rawak dari kotak itu.

*Diagram 30 shows some labelled cards in a box. Two cards are picked at random from the box.*



Rajah 30

Diagram 30

Cari kebarangkalian bahawa kad berlabel nombor perdana atau huruf konsonan dipilih.

*Find the probability that the card labelled with a prime number or a consonant is chosen.*

**A**  $\frac{12}{13}$

**C**  $\frac{7}{13}$

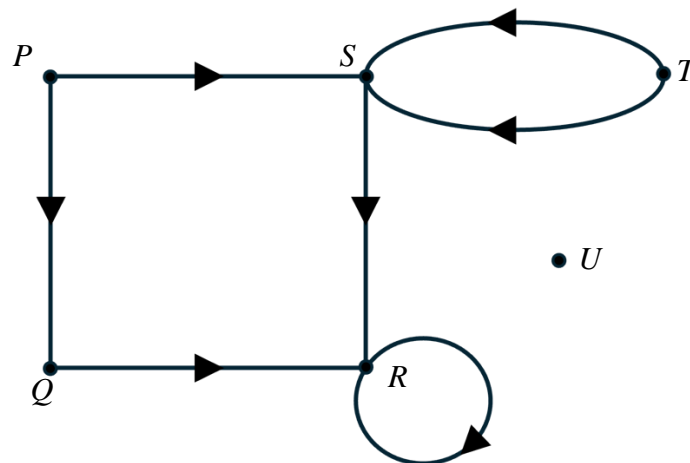
**B**  $\frac{8}{13}$

**D**  $\frac{5}{13}$

31. Antara berikut, yang manakah pasangan sebutan serupa?  
Which of the following is a like term?

- A**  $2c$  dan  $2c^2$   
 $2c$  and  $2c^2$
- B**  $-0.3xy^2$  dan  $\frac{2}{7}y^2x$   
 $-0.3xy^2$  and  $\frac{2}{7}y^2x$
- C**  $5x$  dan  $5y$   
 $5x$  and  $5y$
- D**  $a^3b$  dan  $ab^3$   
 $a^3b$  and  $ab^3$

32. Rajah 32 menunjukkan suatu graf.  
Diagram 32 shows a graph.



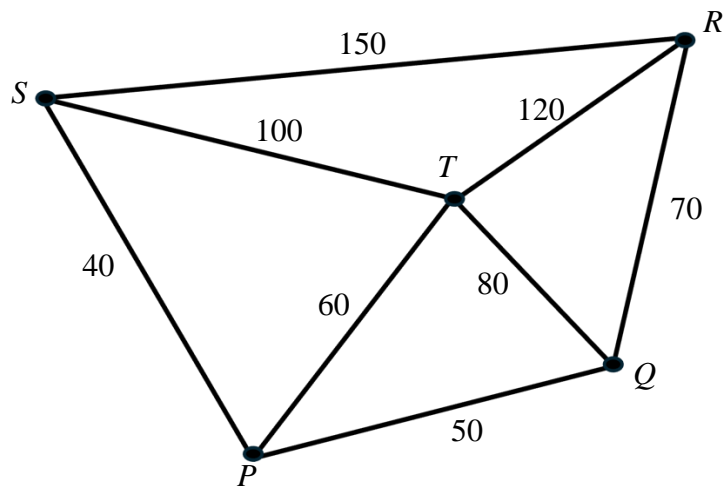
Rajah 32  
Diagram 32

- Antara berikut, yang manakah benar?  
Which of the following is true?

- A**  $E = \{ (P, Q), (P, S), (Q, R), (R, R), (R, S), (S, T), (S, T) \}$
- B**  $V = \{ P, Q, R, S, T \}$
- C**  $d_{\text{in}}(R) = 2$
- D**  $U$  ialah bucu terpencil  
 $U$  is an isolated vertex

33. Rajah 33 menunjukkan suatu rangkaian jalan raya yang menghubungkan lima buah bandar  $P$ ,  $Q$ ,  $R$ ,  $S$  dan  $T$ .

*Diagram 33 shows a network of roads connecting five towns  $P$ ,  $Q$ ,  $R$ ,  $S$  and  $T$ .*



Rajah 33  
Diagram 33

Jarak, dalam km, di antara dua buah bandar adalah ditunjukkan pada tepi graf. Sebuah van pos yang berlepas dari bandar  $P$  ingin mengunjungi setiap bandar sebelum kembali ke bandar  $P$ . Tentukan jarak minimum yang dilaluinya.

*The distance, in km, between two towns is represented by the edges. A postal van that departs from town  $P$  wants to visit each town before returning to town  $P$ .*

*Determine the minimum distance it travels.*

- A** 440
- B** 430
- C** 380
- D** 360

34. Tentukan pernyataan yang benar.

*Determine the true statement.*

**A**  $\frac{1}{2} > 2$  atau  $5 \times 10^{-3} = 0.0005$

$\frac{1}{2} > 2$  or  $5 \times 10^{-3} = 0.0005$

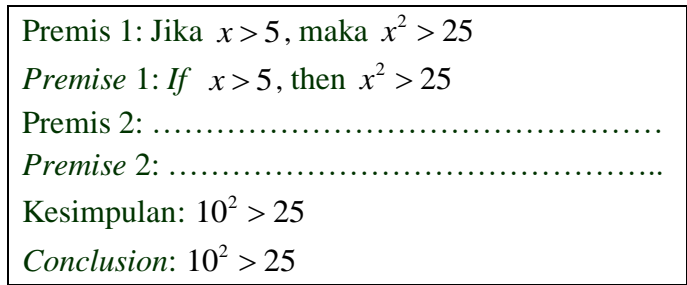
**B**  $\sqrt{-100} = -10$  dan  $(-10)^2 = 100$

$\sqrt{-100} = -10$  and  $(-10)^2 = 100$

**C** Semua nombor genap boleh ditulis dalam bentuk  $k^2$ ,  $k$  ialah suatu integer.  
*All even numbers can be written in the form of  $k^2$ ,  $k$  is an integer.*

**D** Sebilangan persamaan kuadratik mempunyai punca-punca yang sama.  
*Some quadratic equations have the same roots.*

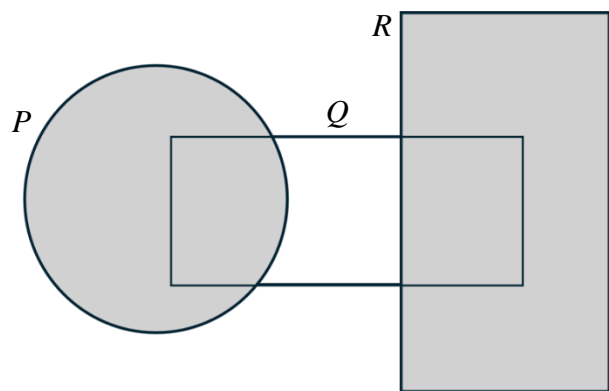
35. Rajah 35 menunjukkan suatu hujah.  
*Diagram 35 shows an argument.*



Rajah 35  
 Diagram 35

Antara berikut, yang manakah premis 2?  
*Which of the following is premise 2?*

- |                    |                      |
|--------------------|----------------------|
| <b>A</b> $10 > 5$  | <b>C</b> $10^2 < 5$  |
| <b>B</b> $10 > 25$ | <b>D</b> $10^2 < 25$ |
36. Hitung jarak di antara titik  $M(3, 16)$  dengan titik  $N(8, 4)$ .  
*Calculate the distance between point  $M(3, 16)$  and point  $N(8, 4)$ .*
- |            |             |
|------------|-------------|
| <b>A</b> 5 | <b>C</b> 13 |
| <b>B</b> 9 | <b>D</b> 17 |
37. Rajah 37 berikut menunjukkan gamabr rajah Venn. Diberi bahawa set semesta  $\xi = P \cup Q \cup R$ .  
*Diagram 37 shows a Venn diagram. Given the universal set  $\xi = P \cup Q \cup R$ .*



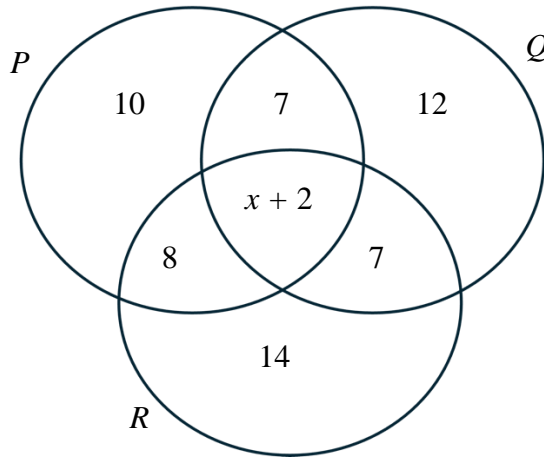
Rajah 37  
 Diagram 37

Antara berikut, yang manakah mewakili kawasan berlorek?  
*Which of the following represents the shaded region?*

- |                              |                               |
|------------------------------|-------------------------------|
| <b>A</b> $(P \cap Q) \cup R$ | <b>C</b> $(P \cup Q') \cup R$ |
| <b>B</b> $P \cap (Q \cup R)$ | <b>D</b> $P \cup (Q \cap R)$  |

38. Rajah 38 menunjukkan satu gambar rajah Venn yang menunjukkan bilangan unsur dalam set  $P$ , set  $Q$  dan set  $R$ .

Diagram 38 shows a Venn diagram showing the number of elements in set  $P$ , set  $Q$  and set  $R$ .



Rajah 38  
Diagram 38

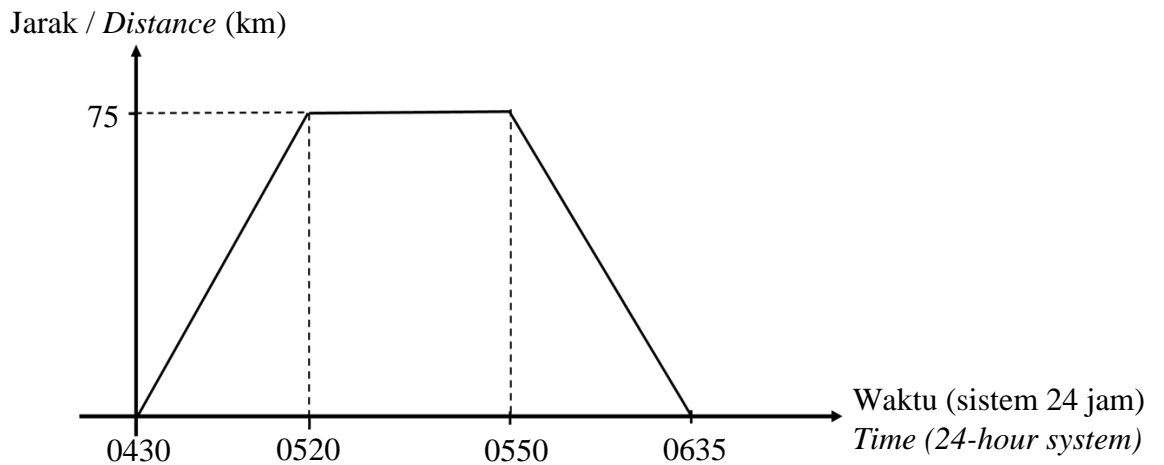
Diberi bahawa set semesta  $\xi = P \cup Q \cup R$  dan  $n(Q') = n(Q \cap R)$ . Cari nilai  $x$ .

Given that the universal set  $\xi = P \cup Q \cup R$  and  $n(Q') = n(Q \cap R)$ . Find the value of  $x$ .

- |          |    |          |    |
|----------|----|----------|----|
| <b>A</b> | 20 | <b>C</b> | 25 |
| <b>B</b> | 23 | <b>D</b> | 32 |

39. Rajah 39 menunjukkan graf jarak-masa bagi perjalanan sebuah kereta.

Diagram 39 shows the distance-time graph for the motion of a car.



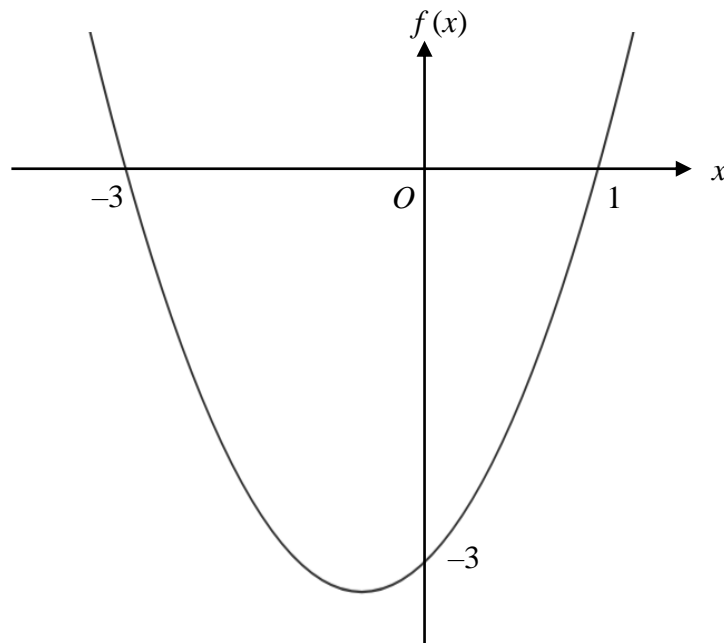
Rajah 39  
Diagram 39

Nyatakan tempoh masa, dalam minit, kereta berada dalam keadaan pegun.

State the length of time, in minutes, when the car is stationary.

- |          |    |          |     |
|----------|----|----------|-----|
| <b>A</b> | 30 | <b>C</b> | 50  |
| <b>B</b> | 45 | <b>D</b> | 125 |

40. Rajah 40 menunjukkan satu graf fungsi kuadratik.  
*Diagram 40 shows a graph of a quadratic function.*



Rajah 40  
*Diagram 40*

Antara yang berikut, persamaan yang manakah mewakili graf di atas?  
*Which of the following equation represents the graph above?*

- A**  $f(x) = -x^2 + 2x - 3$
- B**  $f(x) = -x^2 - 2x - 3$
- C**  $f(x) = x^2 - 2x - 3$
- D**  $f(x) = x^2 + 2x - 3$

- **KERTAS SOALAN TAMAT** -  
- **END OF QUESTION** -