



JABATAN PENDIDIKAN NEGERI PERAK

MOCK TEST 2

SIJIL PELAJARAN MALAYSIA

MATEMATIK

TINGKATAN 5

Kertas 1

Satu jam lima belas minit

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

1. *Kertas soalan ini mengandungi 40 soalan dalam dwibahasa.*
2. *Jawab semua soalan.*
3. *Rajah yang mengiringi soalan tidak dilukis mengikut skala kecuali dinyatakan.*
4. *Satu senarai rumus disediakan di halaman 2 dan 3.*
5. *Anda dibenarkan menggunakan kalkulator saintifik.*

Kertas soalan ini mengandungi 19 halaman bercetak.

MATHEMATICAL FORMULAE
RUMUS MATEMATIK

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

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

RELATIONS
PERKAITAN

- | | |
|--|---|
| 1 $a^m \times a^n = a^{m+n}$ | 10 Pythagoras Theorem
<i>Teorem Pithagoras</i>
$c^2 = a^2 + b^2$ |
| 2 $a^m \div a^n = a^{m-n}$ | |
| 3 $(a^m)^n = a^{mn}$ | 11 $P(A) = \frac{n(A)}{n(S)}$ |
| 4 $A^{-1} = \frac{1}{ad-bc} \begin{pmatrix} d & -b \\ -c & a \end{pmatrix}$ | 12 $P(A') = 1 - P(A)$ |
| 5 Distance / <i>Jarak</i>
$= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ | 13 $m = \frac{y_2 - y_1}{x_2 - x_1}$ |
| 6 Midpoint / <i>Titik tengah</i>
$(x, y) = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$ | 14 $m = -\frac{y\text{-intercept}}{x\text{-intercept}}$

$m = -\frac{\text{pintasan } y}{\text{pintasan } x}$ |
| 7 Average speed = $\frac{\text{distance travelled}}{\text{time taken}}$

<i>Purata laju = $\frac{\text{jarak yang dilalui}}{\text{masa yang diambil}}$</i> | |
| 8 Mean = $\frac{\text{sum of data}}{\text{number of data}}$

<i>Min = $\frac{\text{hasil tambah nilai data}}{\text{bilangan data}}$</i> | |
| 9 Mean = $\frac{\text{sum of (classmark} \times \text{frequency)}}{\text{sum of frequencies}}$

<i>Min = $\frac{\text{hasil tambah (nilai titik tengah kelas} \times \text{kekerapan)}}{\text{hasil tambah kekerapan}}$</i> | |

**SHAPES AND SPACE
BENTUK DAN RUANG**

- 1 Area of trapezium = $\frac{1}{2} \times \text{sum of parallel sides} \times \text{height}$
Luas trapezium = $\frac{1}{2} \times \text{hasil tambah dua sisi selari} \times \text{tinggi}$
- 2 Circumference of circle = $\pi d = 2\pi r$
Lilitan bulatan = $\pi d = 2\pi r$
- 3 Area of circle = πr^2
Luas bulatan = πr^2
- 4 Curved surface area of cylinder = $2\pi rh$
Luas permukaan melengkung silinder = $2\pi rt$
- 5 Surface area of sphere = $4\pi r^2$
Luas permukaan sfera = $4\pi r^2$
- 6 Volume of right prism = cross sectional area \times length
Isipadu prisma tegak = luas keratan rentas \times panjang
- 7 Volume of cylinder = $\pi r^2 h$
Isipadu silinder = $\pi r^2 t$
- 8 Volume of cone = $\frac{1}{3} \pi r^2 h$
Isipadu kon = $\frac{1}{3} \pi r^2 t$
- 9 Volume of sphere = $\frac{4}{3} \pi r^3$
Isipadu sfera = $\frac{4}{3} \pi r^3$
- 10 Volume of right pyramid = $\frac{1}{3} \times \text{base area} \times \text{height}$
Isipadu piramid tegak = $\frac{1}{3} \times \text{luas tapak} \times \text{tinggi}$
- 11 Sum of interior angles of a polygon
Hasil tambah sudut pedalaman poligon
 $= (n - 2) \times 180^\circ$

$$12 \quad \frac{\text{arc length}}{\text{circumference of circle}} = \frac{\text{angle subtended at centre}}{360^\circ}$$

$$\frac{\text{panjang lengkung}}{\text{lilitan bulatan}} = \frac{\text{sudut pusat}}{360^\circ}$$

$$13 \quad \frac{\text{area of sector}}{\text{area of circle}} = \frac{\text{angle subtended at centre}}{360^\circ}$$

$$\frac{\text{luas sektor}}{\text{luas bulatan}} = \frac{\text{sudut pusat}}{360^\circ}$$

$$14 \quad \text{Scale factor, } k = \frac{PA'}{PA}$$

$$\text{Faktor skala, } k = \frac{PA'}{PA}$$

$$15 \quad \text{Area of image} = k^2 \times \text{area of object}$$
$$\text{Luas imej} = k^2 \times \text{luas objek}$$

Answer **all** questions.

Jawab semua soalan.

1. Which number is rounded off correctly to three significant figures ?
Nombor yang manakah dibundarkan betul kepada tiga angka bererti ?

	Number <i>Nombor</i>	Rounded off correctly to three significant figures <i>Dibundarkan betul kepada tiga angka bererti</i>
A	0.002846	0.00285
B	0.002856	0.00285
C	29140	29200
D	29260	29200

2. Express 0.00003069 in standard form.
Ungkapkan 0.00003069 dalam bentuk piawai.

A 3069×10^8 **C** 3.069×10^{-5}
B 3.069×10^5 **D** 3069×10^{-8}

3. $0.0000025 - 1.3 \times 10^{-7}$

A 1.2×10^{-6} **C** 2.37×10^{-6}
B 1.2×10^{-7} **D** 2.37×10^{-7}

4. $\frac{0.003}{6 \times 10^2} =$

A 5×10^{-7} **C** 5×10^{-2}
B 5×10^{-6} **D** 5×10^{-1}

5. What is the value of the digit 3, in base ten, of the number 1302_5 ?
Apakah nilai digit 3, dalam asas sepuluh, bagi nombor 1302_5 ?

A 25 **C** 125
B 75 **D** 375

6. $10110_2 + 111_2$

A 10101_2 **C** 11011_2
B 11001_2 **D** 11101_2

7. In Diagram 1, PQRSTU is a regular hexagon. PUVW is a straight line.
Dalam Rajah 1, PQRSTU ialah sebuah heksagon sekata. PUVW ialah garis lurus.

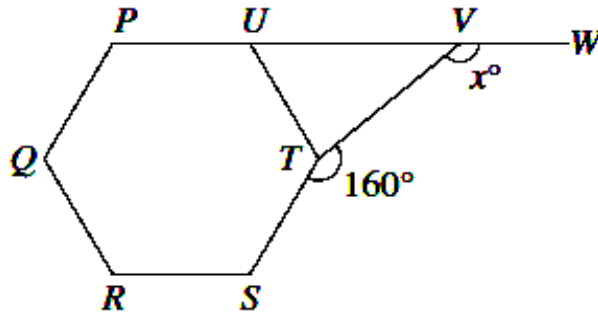


Diagram 1/ Rajah 1

Find the value of x .
Cari nilai x .

- A 110 C 130
 B 120 D 140
8. Diagram 2 shows a pentagon PQRST. The straight line QR is parallel to the straight line TSU.
Rajah 2 menunjukkan sebuah pentagon PQRST. Garis lurus QR adalah selari dengan garis lurus TSU.

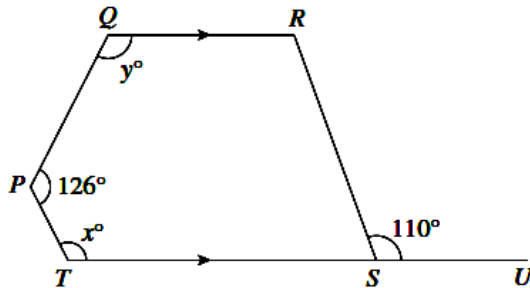


Diagram 2/ Rajah 2

Find the value of $x + y$.
Cari nilai $x + y$.

- A 204 C 224
 B 214 D 234

9. In Diagram 3, PQ and PR are tangents to the circle with centre O at point Q and point R respectively.

Dalam Rajah 3, PQ dan PR masing-masing ialah tangen kepada bulatan berpusat O di titik Q dan titik R .

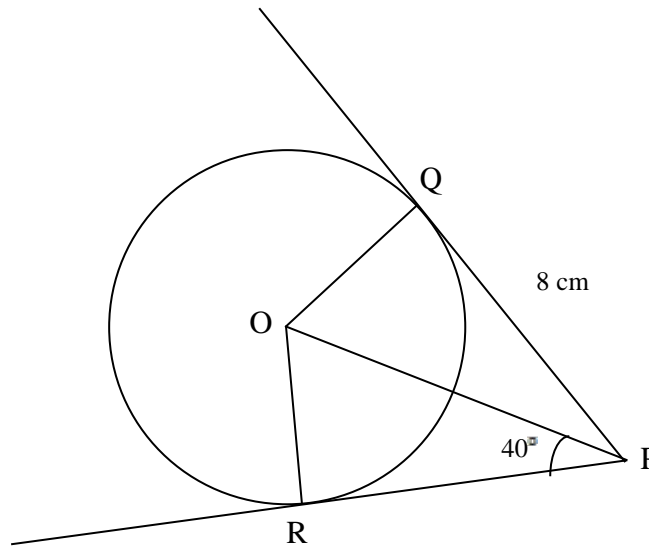


Diagram 3/ Rajah 3

Find the length, in cm, of OR .

Cari panjang, dalam cm, OR

- A 5.14 C 6.71
B 6.13 D 9.53
10. In Diagram 4, $E'F'G'$ is the image of EFG under an enlargement.
Dalam Rajah 4, $E'F'G'$ ialah imej EFG di bawah suatu pembesaran.

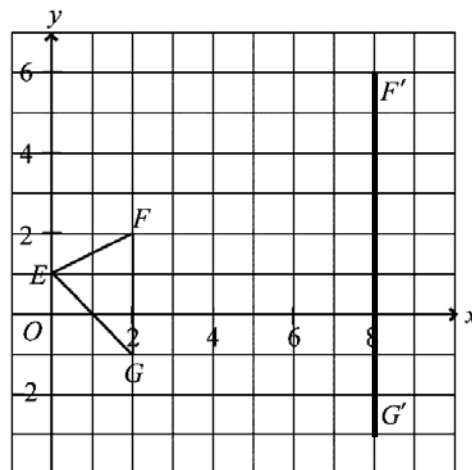


Diagram 4/ Rajah 4

Find the coordinates of point E' .

Cari koordinat bagi titik E' .

- A (1, 3) C (2, 3)
B (2, 1) D (3, 3)

11. In Diagram 5, poligon N is the image of poligon M under a reflection.
Dalam Rajah 5, poligon N ialah imej bagi poligon M di bawah suatu pantulan.

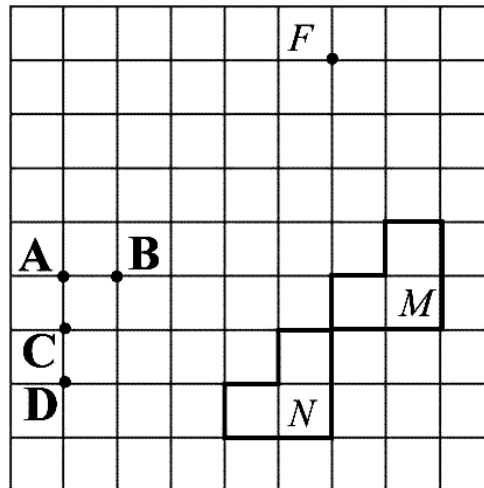


Diagram 5/ Rajah 5

Which of the points **A**, **B**, **C** and **D**, is the image of point F under the same reflection?
*Antara titik **A**, **B**, **C**, dan **D**, manakah imej bagi titik F di bawah pantulan yang sama?*

12. In Diagram 6, R is the midpoint of the straight line QS .
Dalam Rajah 6, R ialah titik tengah bagi garis lurus QS .

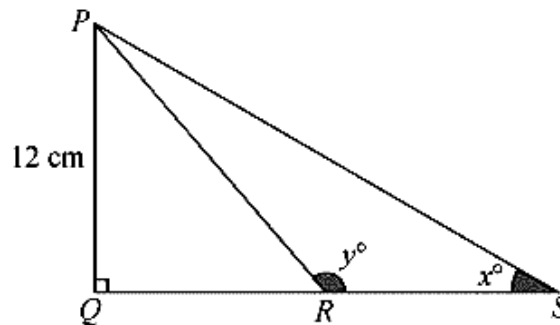


Diagram 6 / Rajah 6

Given that $PQ = 12$ cm and $\sin x^\circ = \frac{3}{5}$, find the value of $\tan y^\circ$.

Diberi $PQ = 12$ cm dan $\sin x^\circ = \frac{3}{5}$, cari nilai bagi $\tan y^\circ$.

- A** -1.6 **C** 1.5
B -1.5 **D** 1.6

13. Diagram 7 shows the graph of $y = \cos x$.
Rajah 7 menunjukkan graf bagi $y = \cos x$.

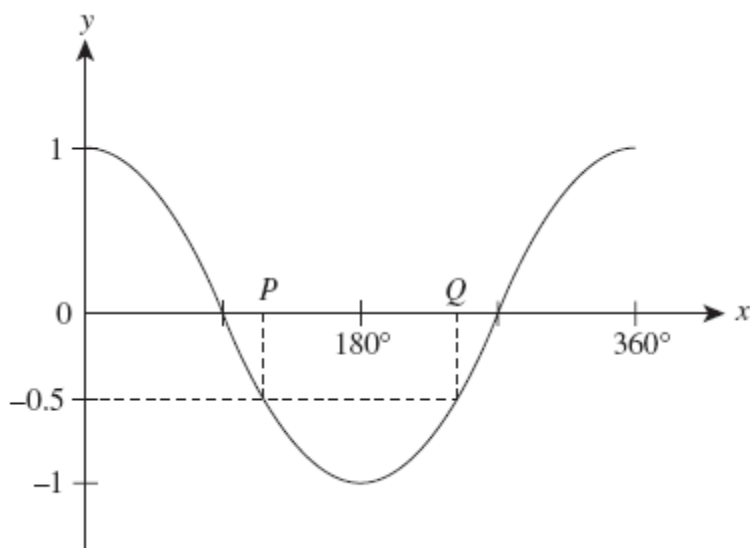


Diagram 7 / Rajah 7

Find the values of P and Q .
Cari nilai P dan nilai Q .

- A $P = 120^\circ, Q = 210^\circ$ C $P = 150^\circ, Q = 210^\circ$
B $P = 120^\circ, Q = 240^\circ$ D $P = 150^\circ, Q = 240^\circ$
14. Diagram 8 shows a cuboid with a horizontal base $PQRS$.
Rajah 8 menunjukkan sebuah kuboid dengan tapak mengufuk $PQRS$.

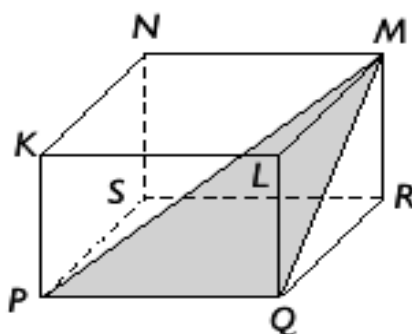


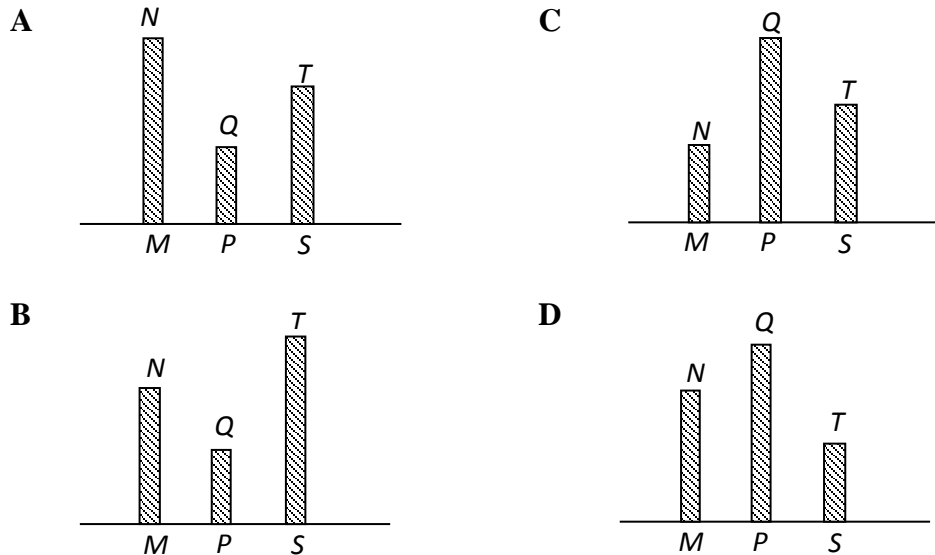
Diagram 8/ Rajah 8

Name the angle between the plane PQM and the base $PQRS$.
Namakan sudut di antara satah PQM dengan tapak $PQRS$.

- A $\angle MPS$ C $\angle MQR$
B $\angle MPQ$ D $\angle PQR$

15. Three vertical poles, MN , PQ and ST , are on the horizontal ground. The angle of elevation of Q from M is 35° , the angle of depression of Q from T is 40° and the angle of elevation of N from T is 22° . Which of the following diagram shows the positions of the poles correctly?

Tiga batang tiang tegak, MN , PQ dan ST , dipacakkan atas tanah mengufuk. Sudut dongakan Q dari M ialah 35° , sudut tunduk Q dari T ialah 40° dan sudut dongakan N dari T ialah 22° . Antara berikut, yang manakah menunjukkan kedudukan tiang-tiang yang betul?



16. Diagram 9 shows two towers, RT and UV , on a horizontal plane. S is a point vertically below R . The angle of elevation of S from U is 29° and the angle of depression of U from R is 38° .

Rajah 9 menunjukkan dua menara, RT dan UV , yang terletak pada satah mengufuk. S ialah titik yang berada tegak di bawah R . Sudut dongakan S dari U ialah 29° dan sudut tunduk U dari R ialah 38° .

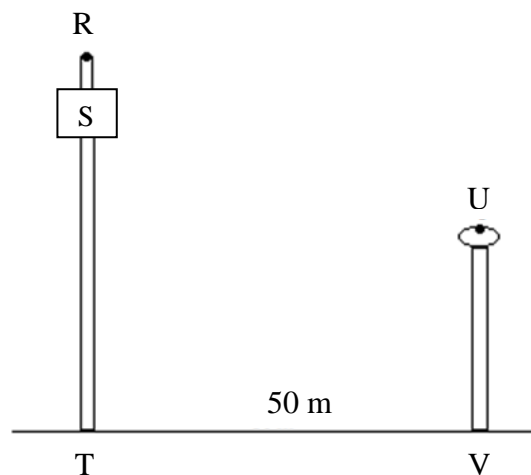


Diagram 9/ Rajah 9

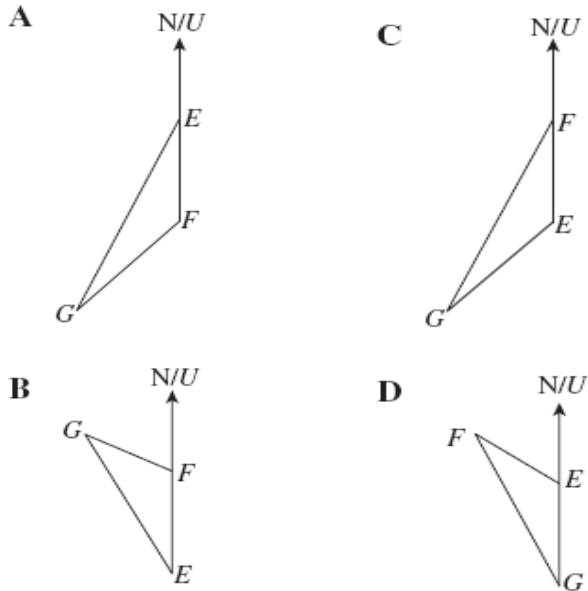
Calculate the distance, in m, from R to S .

Hitung jarak, dalam m, dari R ke S .

- A 11.35 C 27.72
 B 19.43 D 39.06

17. Points E , F and G lie on a horizontal plane. E is due south of F . The bearing of F from G is 135° and the bearing of G from E is 340° . Which of the following diagrams shows the positions of E , F and G ?

Titik E , F dan G terletak pada suatu satah mengufuk. E terletak ke selatan F . Bearing F dari G ialah 135° dan bearing G dari E ialah 340° . Antara rajah berikut, yang manakah menunjukkan kedudukan E , F dan G ?



18. Diagram 10 shows the locations of five towns, **A**, **B**, **C**, **D** and **P**, on the surface of the earth.

*Rajah 10 menunjukkan kedudukan lima bandar, **A**, **B**, **C**, **D** dan **P**, pada permukaan bumi.*

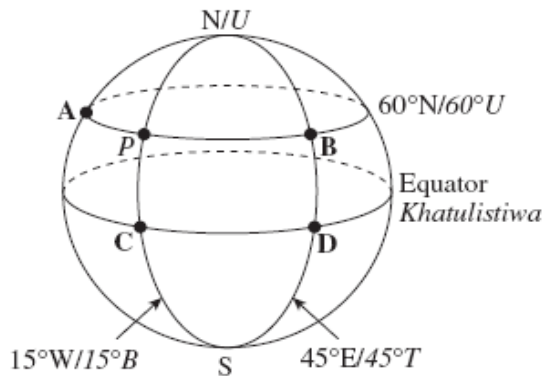


Diagram 10/ Rajah 10

Which of the towns, **A**, **B**, **C** or **D**, is located east of **P** with a difference in longitude of 60° ?

*Antara bandar **A**, **B**, **C** dan **D**, yang manakah terletak ke timur **P** dengan beza longitud sebanyak 60° ?*

19. Factorise $3x^2 - x(2x - 1)$.
 Faktorkan $3x^2 - x(2x - 1)$.

A $x(x + 1)$ **C** $(x - 1)(x - 2)$
B $(x + 1)(x - 1)$ **D** $(x + 2)(x - 1)$

20. Express $\frac{n}{5} - \frac{5 - 2n^2}{15n}$ as a single fraction in its simplest form.

Ungkapkan $\frac{n}{5} - \frac{5 - 2n^2}{15n}$ sebagai satu pecahan tunggal dalam bentuk termudah.

A $\frac{n^2 - 5}{15n}$ **C** $\frac{n^2 - 1}{3n}$
B $\frac{n^2 + 5}{15n}$ **D** $\frac{n^2 + 1}{3n}$

21. Given that $p = \frac{6 + 5q}{q - 3}$, express q in term of p .

Diberi $p = \frac{6 + 5q}{q - 3}$, ungkapkan q dalam sebutan p .

A $\frac{p + 5}{3(2 - p)}$ **C** $\frac{3(2 - p)}{p + 5}$
B $\frac{p - 5}{3(2 + p)}$ **D** $\frac{3(2 + p)}{p - 5}$

22. Given that $\frac{1 - 4p}{2} = 3(p - 2)$, calculate the value of p .

Diberi $\frac{1 - 4p}{2} = 3(p - 2)$, hitung nilai p .

A $\frac{3}{10}$ **C** $\frac{6}{5}$
B $\frac{7}{8}$ **D** $\frac{13}{10}$

23. Evaluate $81^{\frac{3}{4}} \div 27^{\frac{4}{3}} \times 3^{-2}$.

Nilaikan $81^{\frac{3}{4}} \div 27^{\frac{4}{3}} \times 3^{-2}$.

A 3^9 **C** 3^5
B 3^7 **D** 3^{-3}

24. Find the solution of $-\frac{1}{5} \leq z + 2 \leq 3 - \frac{1}{2}z$
Cari penyelesaian bagi $-\frac{1}{5} \leq z + 2 \leq 3 - \frac{1}{2}z$
- A** $-\frac{3}{5} \leq z \leq \frac{2}{3}$ **C** $-\frac{3}{5} \leq z \leq \frac{1}{3}$
B $-\frac{11}{5} \leq z \leq \frac{2}{3}$ **D** $-\frac{11}{5} \leq z \leq \frac{1}{3}$

25. Solve the inequality $5x + 3 > 1 - \frac{3x}{4}$
Selesaikan ketaksamaan $5x + 3 > 1 - \frac{3x}{4}$
- A** $x > -\frac{8}{17}$ **C** $x > -\frac{23}{8}$
B $x > -\frac{8}{23}$ **D** $x > \frac{1}{8}$

26. List all the integers w which satisfy both the simultaneous linear inequalities
 $\frac{w}{5} > -1$ and $2 + w \leq 3$

Senaraikan semua integer w yang memuaskan kedua-dua ketaksamaan linear serentak $\frac{w}{5} > -1$ dan $2 + w \leq 3$

- A** $-4, -3, -2, -1, 0, 1$ **C** $-5, -4, -3, -2, -1, 0$
B $-4, -3, -2, -1, 0$ **D** $-5, -4, -3, -2, -1, 0, 1$

27. Diagram 11 is an incomplete bar chart showing the number of students who are members of the police cadet in five classes.

Rajah 11 ialah carta palang yang tidak lengkap yang menunjukkan bilangan ahli kadet polis dari lima kelas.

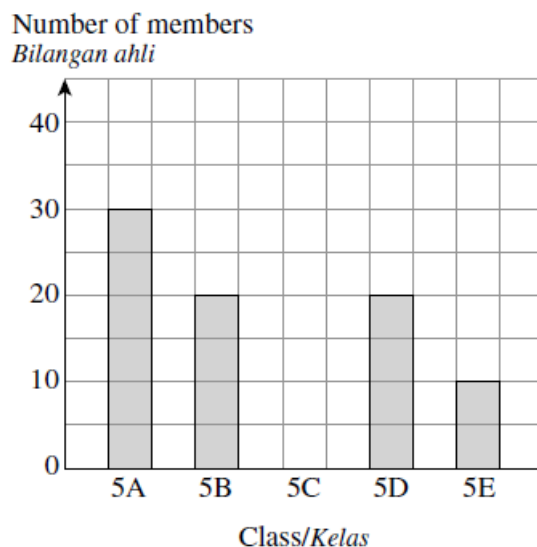


Diagram 11/ *Rajah 11*

The number of members in 5C class is twice the number of members in 5B class.

If a pie chart is drawn to represent all the above information, calculate the angle of the sector representing 5A class.

Bilangan ahli dari kelas 5C adalah dua kali bilangan ahli dari kelas 5B.

Jika satu carta pai dilukis untuk mewakili semua maklumat yang diberi, cari sudut sektor yang mewakili kelas 5A.

- A 45° C 75°
B 60° D 90°

28. Table 1 shows the waiting time at a hospital before being attended by a doctor.

Jadual 1 menunjukkan masa menunggu di sebuah hospital sebelum dirawati oleh seorang doktor.

Time (minutes) <i>Masa (minit)</i>	1 – 5	6 – 10	11 – 15	16 – 20	21 – 25	26 – 30
Cumulative Frequency <i>Kekerapan Longgokan</i>	2	5	12	18	23	25

Table 1/ *Jadual 1*

What is the modal class?

Apakah kelas mod?

- A 6 – 10 C 16 – 20
B 11 – 15 D 21 – 25

29. Diagram 12 is a pie chart which shows the sales of different types of magazines, in RM, by a bookshop in March.

Rajah 12 ialah carta pai yang menunjukkan jualan pelbagai jenis majalah, dalam RM, oleh sebuah kedai buku dalam bulan Mac.

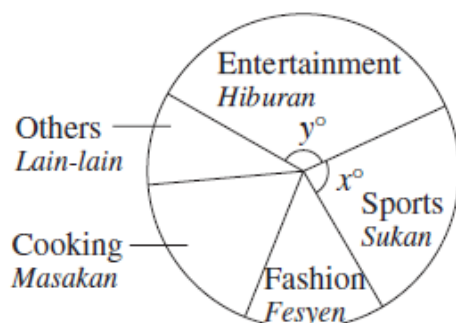


Diagram 12/ Rajah 12

The total sales in March was RM2 400.

The sales of fashion magazines, cooking magazines and others were RM350, RM420 and RM230 respectively.

Given $x : y = 2 : 3$, find the value of x .

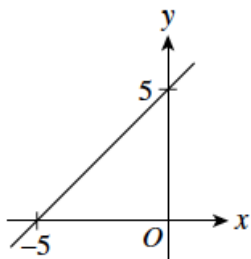
Jumlah jualan dalam bulan Mac ialah RM2 400.

Jualan bagi majalah fesyen, majalah masakan dan majalah-majalah lain masing-masing ialah RM350, RM420 dan RM230.

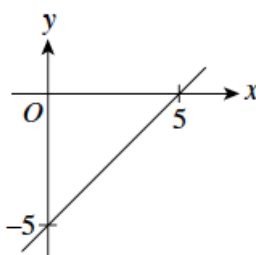
Diberi $x : y = 2 : 3$, cari nilai x .

- A 72 C 84
B 80 D 144
30. Which graph represents $y = -x - 5$?
Graf manakah yang mewakili $y = -x - 5$?

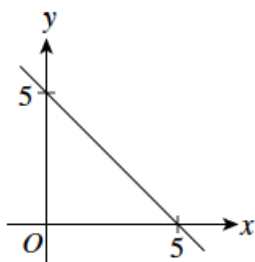
A



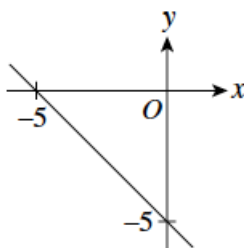
C



B



D



31. Find the gradient of the straight line $2x + 3y = -1$.
Cari kecerunan garis lurus $2x + 3y = -1$.

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

32. Diagram 13 is a Venn diagram which shows the number of elements in set R , set S , set T and the universal set $\xi = R \cup S \cup T$.
Rajah 13 ialah gambar rajah Venn yang menunjukkan bilangan unsur dalam set R , set S , set T dan set semesta $\xi = R \cup S \cup T$.

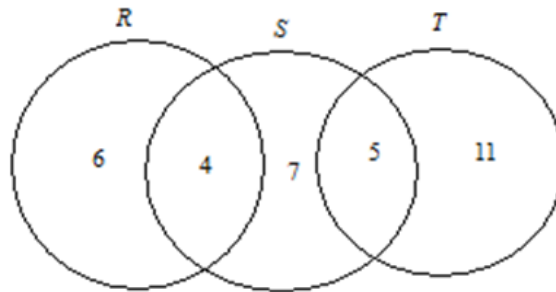


Diagram 13/Rajah 13

Find $n[(R \cup T) \cap S]$.
Cari $n[(R \cup T) \cap S]$.

A 5 C 9
B 7 D 16

33. Diagram 14 is a Venn diagram showing the relation between the universal set ξ , set X and set Y .
Rajah 14 ialah gambar rajah Venn yang menunjukkan hubungan di antara set semesta ξ , set X dan set Y .

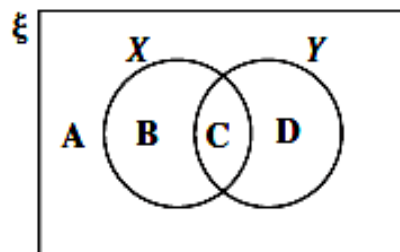


Diagram 14/Rajah 14

Which of the regions, **A**, **B**, **C** or **D**, represents $(X' \cap Y')$?
Antara rantau **A**, **B**, **C** dan **D**, yang manakah mewakili $(X' \cap Y')$?

34. Diagram 15 shows seven cards labelled with numbers.
Rajah 15 menunjukkan tujuh keping kad yang berlabel dengan nombor.

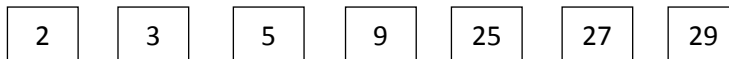


Diagram 15 / *Rajah 15*

A card is chosen at random. Find the probability that a perfect square number card is chosen.

Satu kad dipilih secara rawak. Cari kebarangkalian satu kad bernombor kuasa dua sempurna dipilih.

- | | |
|---|---|
| <p>A $\frac{2}{7}$</p> <p>B $\frac{3}{7}$</p> | <p>C $\frac{4}{7}$</p> <p>D $\frac{6}{7}$</p> |
|---|---|

35. A shopping centre prepared 4 000 tickets for a raffle, offering a car as its grand prize. Jaysina and her friends brought 150 tickets for the raffle. After one week, they bought another x tickets for the raffle. Their chance of winning the car becomes $\frac{1}{8}$.

Unfortunately, on their way back, $\frac{1}{7}$ of the tickets they just bought were lost.

Find the probability that they can win the grand prize now.

Sebuah pasaraya telah menyediakan 4 000 tiket untuk cabutan bertuah dengan sebuah kereta sebagai hadiah utamanya. Jaysina dan kawan-kawannya membeli 150 tiket untuk menyertai cabutan bertuah itu. Seminggu kemudian, mereka membeli lagi sejumlah x tiket untuk cabutan bertuah itu.

Kebarangkalian mereka untuk memenangi kereta itu meningkat kepada $\frac{1}{8}$.

Malangnya, $\frac{1}{7}$ daripada tiket yang baru dibeli oleh mereka telah tercicir dalam perjalanan pulang.

Cari kebarangkalian mereka untuk memenangi hadiah utama itu sekarang.

- | | |
|---|---|
| <p>A $\frac{1}{16}$</p> <p>B $\frac{7}{16}$</p> | <p>C $\frac{7}{80}$</p> <p>D $\frac{9}{80}$</p> |
|---|---|

36. Table 2 shows a result of a survey on the types of cars owned by a group of 1 000 people.

Jadual 2 menunjukkan keputusan satu tinjauan ke atas jenis-jenis kereta yang dimiliki oleh 1 000 orang.

Type of cars <i>Jenis Kereta</i>	Perdana	Waja	Persona	Proton Saga
Number of owners <i>Bilangan pemilik</i>	120	200	260	420

Table 2 / *Jadual 2*

If 300 persons are picked at random from the group of owners, find the number of owners who did **not** own Proton Saga

*Jika 300 orang dipilih secara rawak daripada kumpulan pemilik, cari bilangan **bukan** pemilik kereta Proton Saga?*

- A 174 C 420
B 290 D 580
37. Table 3 shows some values of variables x , y and z such that x varies directly as the square of y and inversely as z .
- Jadual 3 menunjukkan beberapa nilai pembolehubah x , y dan z dengan keadaan x berubah secara langsung dengan kuasa dua y dan secara songsang dengan z .*

x	y	z
8	6	9
p	3	6

Table 3 / *Jadual 3*

Calculate the value of p .

Hitung nilai p .

- A 2 C 5
B 3 D 9

38. It is given that y varies directly as the square root of w and $y = 21$ when $w = 49$. Calculate the value of w when $y = 15$.
Diberi bahawa y berubah secara langsung dengan punca kuasa dua w dan $y = 21$ apabila $w = 49$. Hitung nilai w apabila $y = 15$.
- A 3 C 9
B 5 D 25

39. $(4 \ 9) - (-3 \ 2) + \frac{1}{2}(8 \ 6) =$
- A (5 13) C (11 12)
B (11 10) D (15 13)

40. $\begin{pmatrix} -1 & 2 \\ 3 & 4 \end{pmatrix} \begin{pmatrix} -3 \\ 2 \end{pmatrix} =$
- A $\begin{pmatrix} 3 & -6 \\ 6 & 8 \end{pmatrix}$ C $\begin{pmatrix} -3 \\ 14 \end{pmatrix}$
B $\begin{pmatrix} 3 & 4 \\ -9 & 8 \end{pmatrix}$ D $\begin{pmatrix} 7 \\ -1 \end{pmatrix}$

SOALAN TAMAT

MATHEMATICS PAPER 1

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