

1449/1  
Mathematics  
Paper 1  
Oct./Nov.  
2010  
1 ¼ hours



## JABATAN PELAJARAN MELAKA

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### PEPERIKSAAN SELARAS AKHIR TAHUN TINGKATAN 4, 2010

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## MATHEMATICS

Paper 1

One hour and fifteen minutes

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**DO NOT OPEN THIS QUESTION PAPER UNTIL  
YOU ARE TOLD TO DO SO**

1. *This question paper consists of **40** questions.*
2. *Answer **all** questions.*
3. *Answer each question by blackening the correct space on the answer sheet.*
4. *Blacken only **one** space for each question.*
5. *If you wish to change your answer, erase the blackened mark that you have done.  
Then blacken the space for the new answer*
6. *The diagrams in the questions provided are not drawn to scale unless stated.*
7. *A list of formulae is provided on pages 2 and 3.*
8. *You may use a non-programmable scientific calculator.*

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This question paper consists of **28** printed pages

<http://tutormansor.wordpress.com/>

### MATHEMATICAL FORMULAE

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

#### RELATIONS

$$1 \quad a^m \times a^n = a^{m+n}$$

$$2 \quad a^m \div a^n = a^{m-n}$$

$$3 \quad (a^m)^n = a^{mn}$$

$$4 \quad A^{-1} = \frac{1}{ad-bc} \begin{pmatrix} d & -b \\ -c & a \end{pmatrix}$$

$$5 \quad P(A) = \frac{n(A)}{n(S)}$$

$$6 \quad P(A') = 1 - P(A)$$

$$7 \quad \text{Distance} = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$8 \quad \text{Midpoint}, (x, y) = \left( \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$9 \quad \text{Average speed} = \frac{\text{distance travelled}}{\text{time taken}}$$

$$10 \quad \text{Mean} = \frac{\text{sum of data}}{\text{number of data}}$$

$$11 \quad \text{Mean} = \frac{\text{sum of (class mark} \times \text{frequency)}}{\text{sum of frequencies}}$$

$$12 \quad \text{Pythagoras Theorem} \\ c^2 = a^2 + b^2$$

$$13 \quad m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$14 \quad m = -\frac{y - \text{int ercept}}{x - \text{int ercept}}$$

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## SHAPES AND SPACE

- 1 Area of trapezium =  $\frac{1}{2} \times \text{sum of parallel sides} \times \text{height}$
- 2 Circumference of circle =  $\pi d = 2\pi r$
- 3 Area of circle =  $\pi r^2$
- 4 Curved surface area of cylinder =  $2\pi r h$
- 5 Surface area of sphere =  $4\pi r^2$
- 6 Volume of right prism = cross sectional area  $\times$  length
- 7 Volume of cylinder =  $\pi r^2 h$
- 8 Volume of cone =  $\frac{1}{3} \pi r^2 h$
- 9 Volume of sphere =  $\frac{4}{3} \pi r^3$
- 10 Volume of right pyramid =  $\frac{1}{3} \times \text{base area} \times \text{height}$
- 11 Sum of interior angles of a polygon =  $(n - 2) \times 180^\circ$
- 12 
$$\frac{\text{arc length}}{\text{circumference of circle}} = \frac{\text{angle subtended at centre}}{360^\circ}$$
- 13 
$$\frac{\text{area of sector}}{\text{area of circle}} = \frac{\text{angle subtended at centre}}{360^\circ}$$
- 14 Scale factor,  $k = \frac{PA'}{PA}$
- 15 Area of image =  $k^2 \times \text{area of object}$

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

- 1 Round off 80715 correct to three significant figures.

*Bundarkan 80715 betul kepada tiga angka bererti.*

- A 80700
- B 80710
- C 80720
- D 80800

- 2 Find the value of  $(3 - 1.272) \div 20$ , and round off the answer correct to two significant figures.

*Cari nilai  $(3 - 1.272) \div 20$ , dan bundarkan jawapan itu betul kepada dua angka bererti.*

- A 0.08
- B 0.09
- C 0.086
- D 0.087

- 3 Express 0.0000892 in standard form.

*Ungkapkan 0.0000892 dalam bentuk piawai.*

- A  $8.92 \times 10^{-5}$
- B  $8.92 \times 10^{-4}$
- C  $8.92 \times 10^4$
- D  $8.92 \times 10^5$

- 4  $3.6 \times 10^{13} + 4.2 \times 10^{12} =$

- A  $7.80 \times 10^{13}$
- B  $4.02 \times 10^{13}$
- C  $7.80 \times 10^{12}$
- D  $4.02 \times 10^{12}$

<http://tutormansor.wordpress.com/>

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- 5 A rectangular floor with a length of 36 m and a width of 28 m has to be tiled. Find the number of square tiles of side 30 cm that are required to cover the whole floor.

*Lantai berbentuk segiempat tepat yang mempunyai panjang 36 m dan lebar 28 m hendak dipasang dengan jubin marmar. Cari bilangan jubin segiempat sama dengan sisi 30 cm yang diperlukan untuk menutupi seluruh lantai itu.*

- A  $1.12 \times 10^4$   
 B  $1.12 \times 10^5$   
 C  $3.36 \times 10^4$   
 D  $3.36 \times 10^5$

- 6 In Diagram 1,  $PQRSTU$  is a regular hexagon.  $TUV$  and  $RPV$  are straight lines. *Dalam Rajah 1,  $PQRSTU$  adalah sebuah heksagon sekata.  $TUV$  dan  $RPV$  adalah garis-garis lurus.*

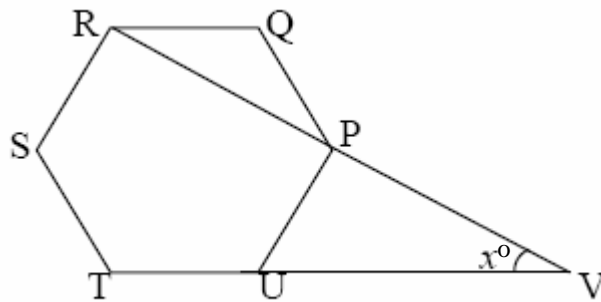


Diagram 1  
 Rajah 1

Find the value of  $x$ .

*Cari nilai bagi  $x$ .*

- A 30  
 B 50  
 C 60  
 D 70

7 In Diagram 2,  $PQRS$  is a rhombus.

*Dalam Rajah 2,  $PQRS$  adalah sebuah rombus.*

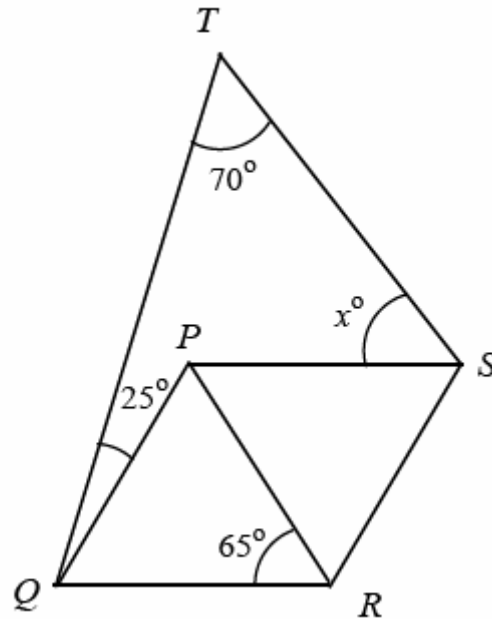


Diagram 2  
*Rajah 2*

Find the value of  $x$ .

*Cari nilai bagi  $x$ .*

- A 15
- B 20
- C 25
- D 35

- 8 In Diagram 3,  $ABC$  and  $CDE$  are tangents to the circle centre  $O$  at  $B$  and  $D$  respectively.

*Dalam Rajah 3,  $ABC$  dan  $CDE$  adalah tangen kepada bulatan berpusat  $O$  masing-masing di titik  $B$  dan  $D$ .*

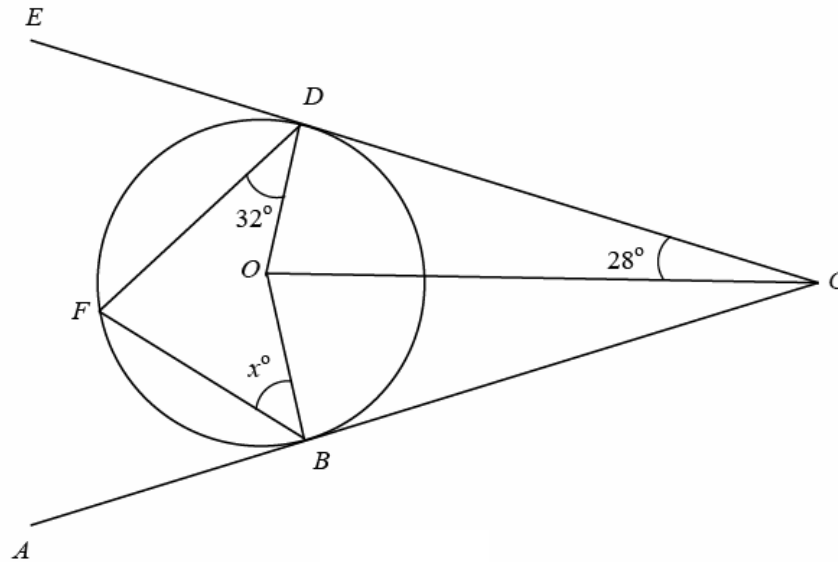


Diagram 3  
Rajah 3

The value of  $x$  is

*Nilai bagi  $x$  ialah*

- A 30
- B 32
- C 58
- D 62

- 9 In Diagram 4,  $QRT$  is a tangent to the circle with centre  $O$  at  $R$ .  $PUS$ ,  $OPQ$  and  $OUR$  are straight lines.

*Dalam Rajah 4,  $QRT$  ialah tangent kepada bulatan berpusat di  $O$  pada titik  $R$ .  $PUS$ ,  $OPQ$  dan  $OUR$  adalah garis-garis lurus.*

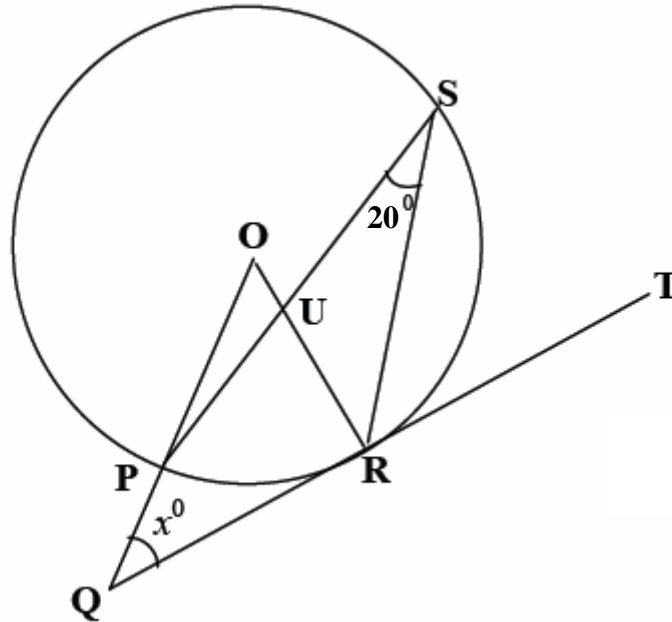


Diagram 4  
Rajah 4

Find the value of  $x$ .

*Cari nilai bagi  $x$ .*

- A 40
- B 45
- C 50
- D 65



10 Diagram 5 shows five triangles,  $P$ ,  $A$ ,  $B$ ,  $C$  and  $D$ , drawn on square grids.

*Rajah 5 menunjukkan lima segitiga bertanda  $P$ ,  $A$ ,  $B$ ,  $C$  and  $D$  dilukis pada grid segiempat sama.*

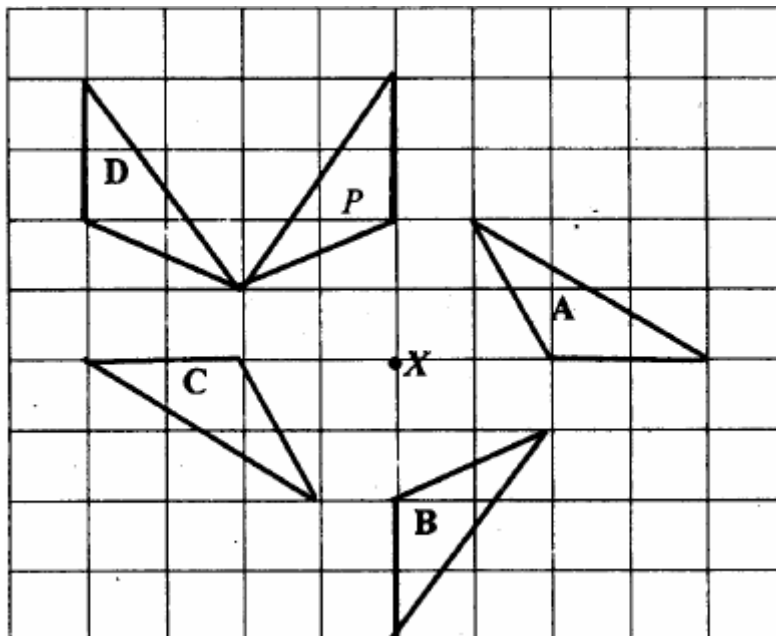


Diagram 5

*Rajah 5*

Triangle  $P$  is rotated under an anticlockwise direction of  $90^\circ$  about centre  $X$ .

Which of the triangles marked  $A$ ,  $B$ ,  $C$  and  $D$  is the image of  $P$ ?

*Segitiga  $P$  diputar  $90^\circ$  pada lawan arah jam pada pusat  $X$ .*

*Antara segitiga-segitiga yang bertanda  $A$ ,  $B$ ,  $C$  dan  $D$ , yang manakah imej bagi  $P$ ?*

- 11 In Diagram 6, pentagon  $ABCDE$  is the image of pentagon  $AFGHI$  under an enlargement.

*Dalam Rajah 6, pentagon  $ABCDE$  adalah imej bagi pentagon  $AFGHI$  di bawah satu pembesaran.*

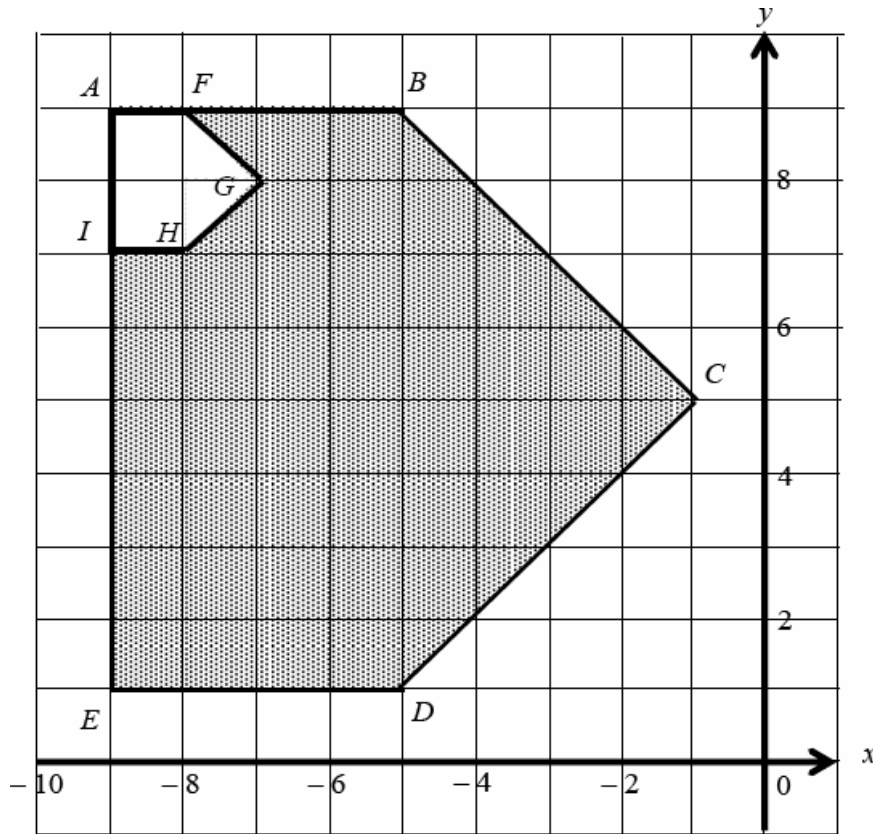


Diagram 6  
Rajah 6

If the area of the shaded region is  $360 \text{ cm}^2$ , calculate the area, in  $\text{cm}^2$ , of pentagon  $AFGHI$ .

*Jika luas kawasan berlorek ialah  $360 \text{ cm}^2$ , hitungkan luas, dalam  $\text{cm}^2$ , bagi pentagon  $AFGHI$ .*

- A 22.5
- B 24
- C 40
- D 120

- 12 Diagram 7 shows a right-angled triangle  $PSQ$  and  $PQR$  is a straight line.  
*Rajah 7 menunjukkan sebuah segitiga bersudut tegak  $PSQ$  dan  $PQR$  ialah garis lurus.*

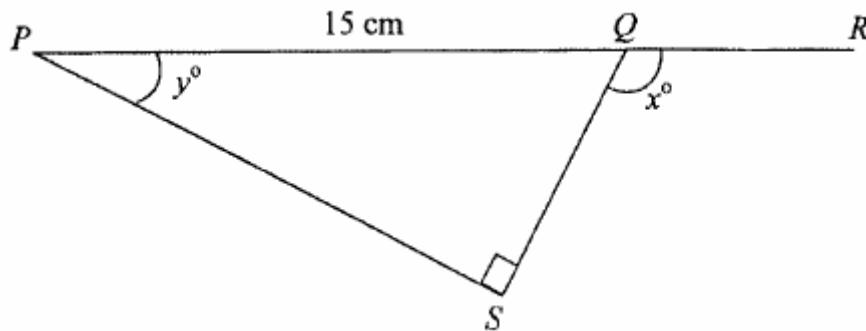


Diagram 7  
*Rajah 7*

Given  $PQ = 15$  cm, and  $\cos x^\circ = -\frac{3}{5}$ , find the value of  $\tan y^\circ$ .

*Diberi  $PQ = 15$  cm dan  $\cos x^\circ = -\frac{3}{5}$ , cari nilai bagi  $\tan y^\circ$ .*

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

13 Diagram 8 shows the graph of  $y = \sin x^\circ$ .

*Rajah 8 menunjukkan graf bagi  $y = \sin x^\circ$ .*

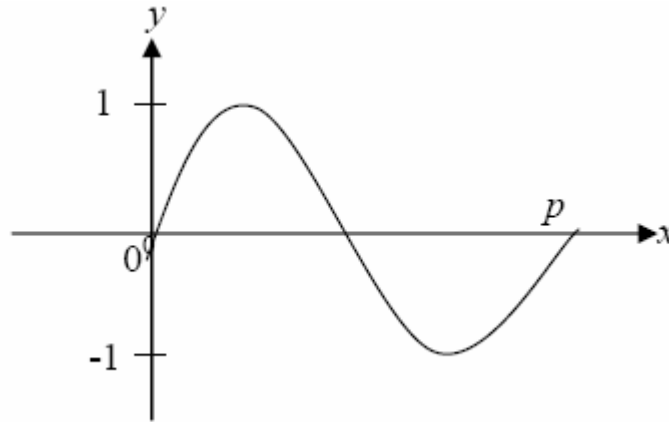


Diagram 8  
*Rajah 8*

The value of  $p$  is

*Nilai  $p$  ialah*

- A  $90^\circ$
- B  $180^\circ$
- C  $270^\circ$
- D  $360^\circ$

14 In Diagram 9,  $PTR$  is a straight line.

*Dalam Rajah 9, PTR ialah garis lurus.*

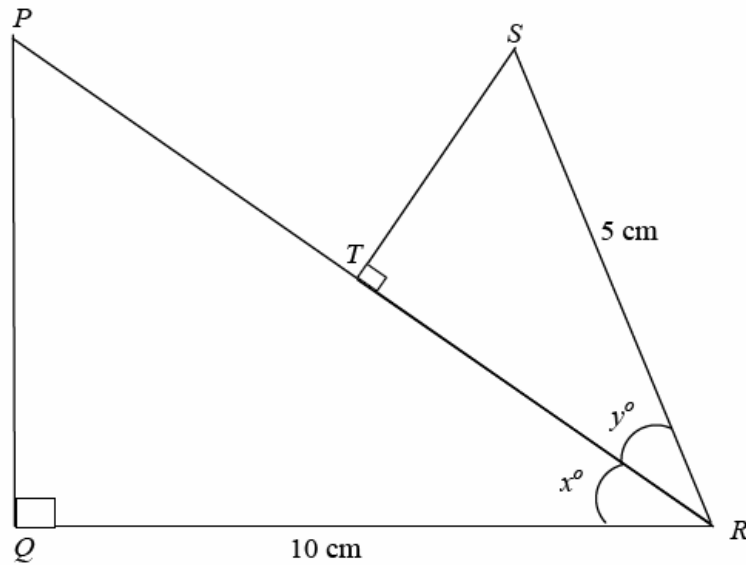


Diagram 9  
Rajah 9

Given that  $\cos x = \frac{5}{13}$  and  $\sin y = \frac{3}{5}$ . Find the length, in cm, of  $PT$ .

*Diberi bahawa  $\cos x = \frac{5}{13}$  dan  $\sin y = \frac{3}{5}$ . Carikan panjang, dalam cm, bagi  $PT$ .*

- A 10
- B 22
- C 23
- D 26

15 Diagram 10 shows a cuboid with a horizontal base  $PQRS$ .

*Rajah 10 menunjukkan sebuah kuboid dengan tapak mengufuk PQRS.*

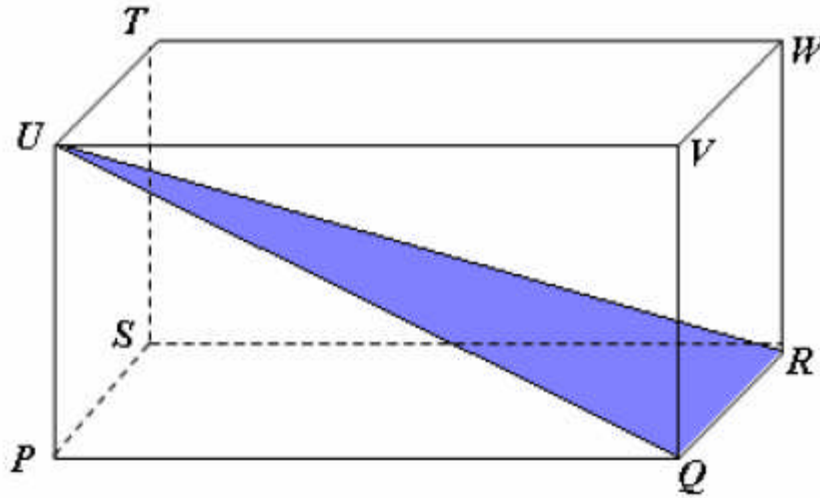


Diagram 10  
*Rajah 10*

Name the angle between the plane  $RQVW$  and the plane  $QUR$ .

*Namakan sudut antara satah  $RQVW$  dan satah  $QUR$ .*

- A  $\angle VQR$
- B  $\angle VUQ$
- C  $\angle VRU$
- D  $\angle VQU$

16 Diagram 11 shows a right-angled triangular prism with a horizontal base  $PQRS$ .

*Rajah 11 menunjukkan sebuah prisma segitiga tegak dengan tapak mengufuk PQRS.*

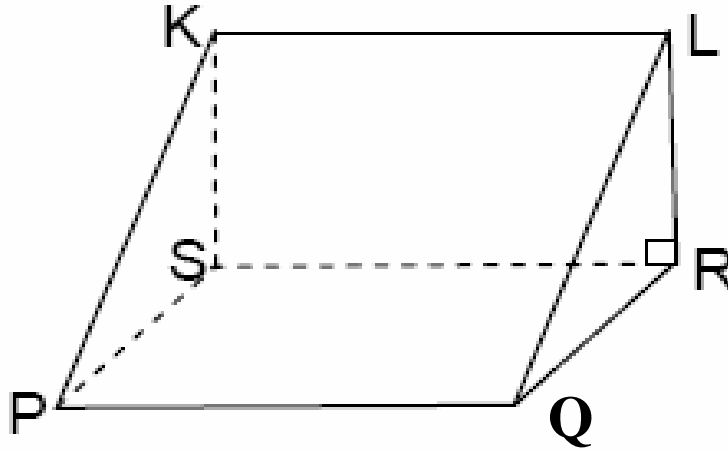


Diagram 11  
*Rajah 11*

Name the angle between the line  $KQ$  and the plane  $PQRS$ .

*Namakan sudut antara garis  $KQ$  dan satah  $PQRS$ .*

- A  $\angle KQP$
- B  $\angle KQR$
- C  $\angle KQS$
- D  $\angle KRQ$

- 17 In Diagram 12,  $PQS$  and  $RT$  are two vertical poles on a horizontal plane  $RS$ .  
*Dalam Rajah 12,  $PQS$  dan  $RT$  adalah dua tiang tegak pada satah mengufuk  $RS$ .*

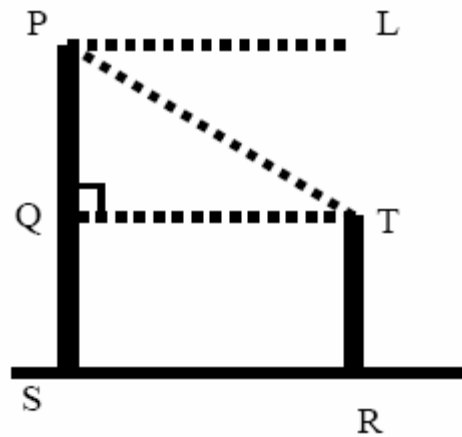


Diagram 12  
*Rajah 12*

Name the angle of elevation of point  $P$  from point  $T$ .

*Namakan sudut dongak titik  $P$  dari titik  $T$ .*

- A  $\angle TPL$
- B  $\angle SPT$
- C  $\angle TPQ$
- D  $\angle QTP$



18 In Diagram 13,  $EF$  is a vertical flag pole on a horizontal plane  $FG$ .

*Dalam Rajah 13,  $EF$  ialah sebatang tiang bendera tegak terletak di atas satah mengufuk  $FG$ .*

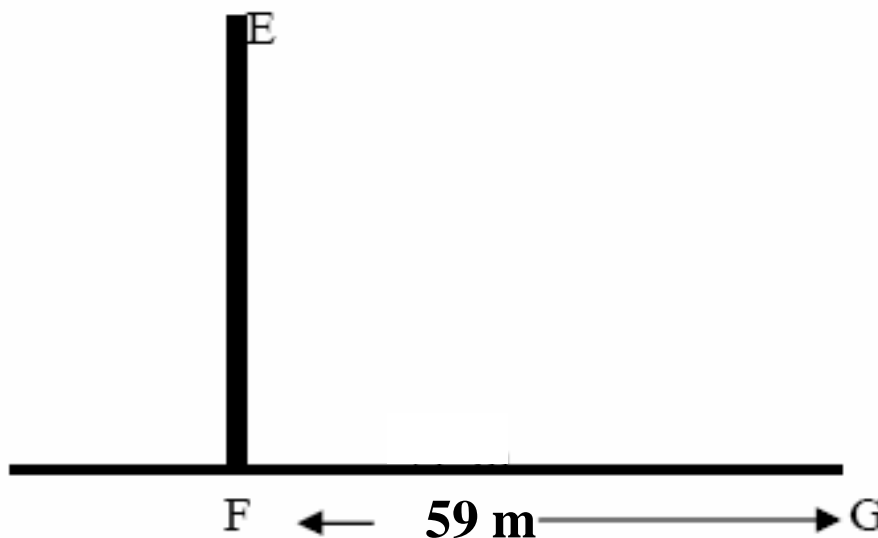


Diagram 13  
*Rajah 13*

Given the angle of elevation of point  $E$  from point  $G$  is  $32^\circ$ . Find the height, in m, of the flag pole  $EF$ .

*Diberi sudut dongakan titik  $E$  dari titik  $G$  ialah  $32^\circ$ . Cari tinggi, dalam m, tiang bendera  $EF$ .*

- A 31.27
- B 36.87
- C 50.03
- D 94.42

19  $5x - 2(1 - x) =$

- A  $3x - 3x^2$
- B  $3x - 2$
- C  $4x - 2$
- D  $7x - 2$

20  $4x(x - 2y) - (x - 3y)^2 =$

A  $3x^2 - 2xy + 3y^2$

B  $3x^2 - 8xy - 3y^2$

C  $3x^2 - 2xy - 9y^2$

D  $3x^2 - 14xy + 9y^2$

21 Express  $\frac{1}{2n} - \frac{n-4}{6n^2}$  as a single fraction in its simplest form.

Ungkapkan  $\frac{1}{2n} - \frac{n-4}{6n^2}$  sebagai satu pecahan tunggal dalam bentuk termudah.

A  $\frac{n+2}{3n^2}$

B  $\frac{n-2}{3n^2}$

C  $\frac{4n+8}{12n^2}$

D  $\frac{4n-8}{12n^2}$

22 Given that  $p - \frac{1}{q} = pq$ , express  $p$  in terms of  $q$ .

Diberi  $p - \frac{1}{q} = pq$ , ungkapkan  $p$  dalam sebutan  $q$ .

A  $p = \frac{1}{q^2 - 1}$

B  $p = \frac{1}{q^2 + 1}$

C  $p = \frac{1}{q(1+q)}$

D  $p = \frac{1}{q(1-q)}$

- 23 Given that  $5u + 4 = 18 - (2 - u)$ , find the value of  $u$ .

*Diberi bahawa  $5u + 4 = 18 - (2 - u)$ , cari nilai  $u$ .*

- A -4
- B -3
- C 3
- D 4

- 24 Simplify  $(x^2y^5)^2 \div x^{-3}y^4$ .

*Permudahkan  $(x^2y^5)^2 \div x^{-3}y^4$ .*

- A  $xy^6$
- B  $x^7y^6$
- C  $x^7y$
- D  $x^{-1}y^{-6}$

- 25 Given that  $32^k \times 16 = 2^{-3k}$ , find the value of  $k$ .

*Diberi bahawa  $32^k \times 16 = 2^{-3k}$ , cari nilai  $k$ .*

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

- 26 List all the integer values of  $p$  that satisfy the two inequalities

$$-1 - 3p < -10 \text{ and } 2p - 3 \leq 13.$$

*Senaraikan semua nilai integer  $p$  yang memuaskan kedua-dua ketaksamaan*

$$-1 - 3p < -10 \text{ dan } 2p - 3 \leq 13.$$

**A** 3, 4, 5, 6, 7, 8

**B** 4, 5, 6, 7

**C** 4, 5, 6, 7, 8

**D** 3, 4, 5, 6, 7

- 27 The solution of  $w \geq 1 + \frac{w}{3}$  is

*Penyelesaian bagi  $w \geq 1 + \frac{w}{3}$  ialah*

**A**  $w \geq \frac{3}{2}$

**B**  $w \geq 2$

**C**  $w \leq \frac{3}{2}$

**D**  $w \leq 2$

- 28 Diagram 14 is a pie chart showing the number of members in three clubs.

*Rajah 14 ialah carta pai yang menunjukkan bilangan ahli di dalam tiga kelab.*

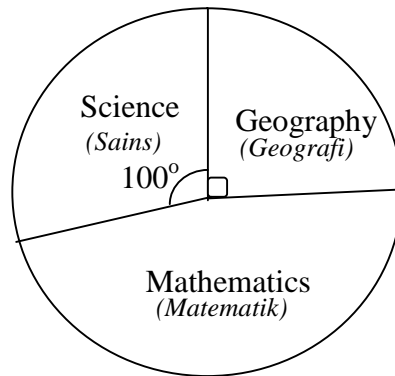


Diagram 14  
*Rajah 14*

The Geography club has 45 members. Calculate the difference between the number of students in Mathematics club and Science club.

*Kelab Geografi mempunyai 45 orang ahli. Kira perbezaan antara bilangan murid dalam kelab Matematik dan kelab Sains.*

- A 10  
B 25  
C 35  
D 40
- 29 Diagram 15 shows the distribution of a student's quiz marks

*Rajah 15 menunjukkan taburan markah kuiz seorang murid*

4 1 3 4 5 m 1 5 3 5

Diagram 15  
*Rajah 15*

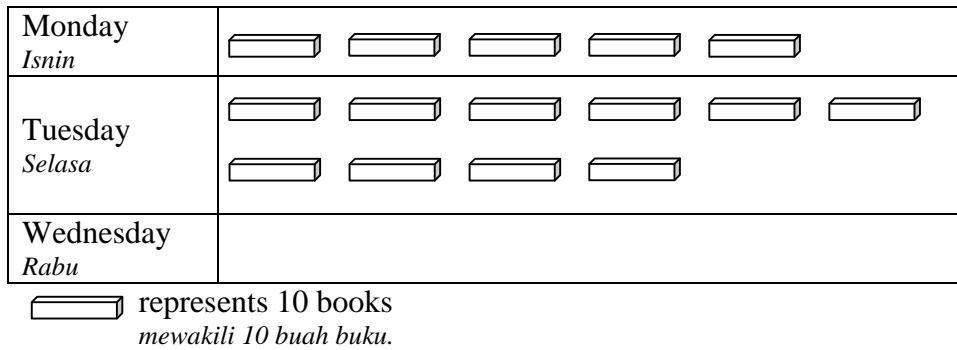
The mode is 5. Find a possible value of  $m$ .

*Modnya ialah 5. Cari kemungkinan nilai bagi  $m$ .*

- A 1  
B 2  
C 3  
D 4

- 30 The pictograph shows the number of books sold at a bookshop in three consecutive days.

*Piktograf menunjukkan bilangan buku yang dijual di sebuah kedai buku dalam tiga hari berturut-turut.*



The sales on Wednesday make up 60% of the total sale of the three days. The numbers of books sold on Wednesday is

*Jualan pada hari Rabu adalah 60% daripada jumlah jualan bagi ketiga-tiga hari itu. Bilangan buku yang dijual pada hari Rabu ialah*

- A 60  
B 100  
C 160  
D 225
- 31 Diagram 16 shows a Venn diagram with the universal set,  $\xi$ , set  $P$  and set  $Q$ .

Which of these regions A, B, C, and D represent  $P \cap Q'$ ?

*Rajah 16 menunjukkan gambar rajah Venn dengan set semesta,  $\xi$ , set  $P$  dan set  $Q$ . Mana di antara kawasan A, B, C, dan D mewakili  $P \cap Q'$ ?*

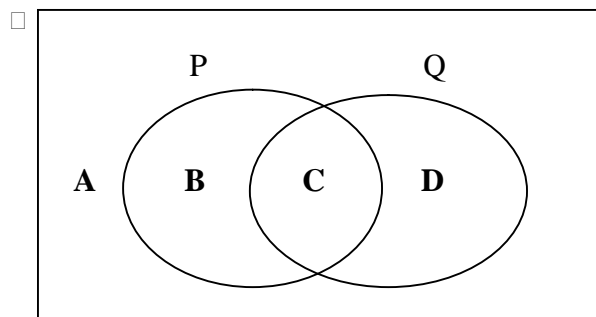


Diagram 16  
*Rajah 16*

- 32** It is given that the universal set  
 $\xi = \{x : 1 \leq x \leq 10, x \text{ is an integer}\}$   
Set  $P = \{x : x \text{ is a factor of } 9\}$   
Set  $Q = \{x : x \text{ is a prime number}\}$  and  
Set  $R = \{x : x \text{ is a multiple of } 2\}$

The set  $(Q \cap R') \cap P'$  is

*Diberi set semesta*

$\xi = \{x : 1 \leq x \leq 10, x \text{ adalah integer}\}$

*Set P = {x : x adalah faktor bagi 9}*

*Set Q = {x : x adalah nombor perdana} dan*

*Set R = {x : x adalah gandaan bagi 2}*

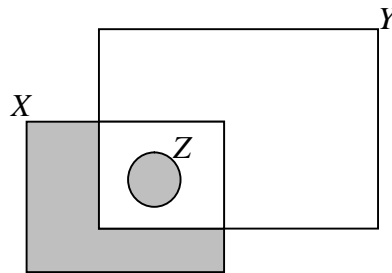
*Set  $(Q \cap R') \cap P'$  ialah*

- A** {3}  
**B** {1, 3}  
**C** {2, 8}  
**D** {5, 7}

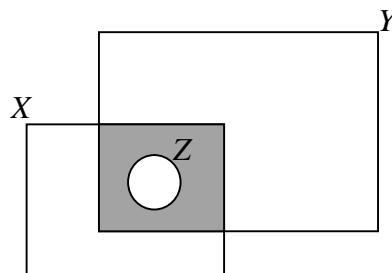
33 Which of the following shows the set  $(X \cup Y) \cap Z'$  ?

*Antara rajah berikut, yang manakah menunjukkan set  $(X \cup Y) \cap Z'$  ?*

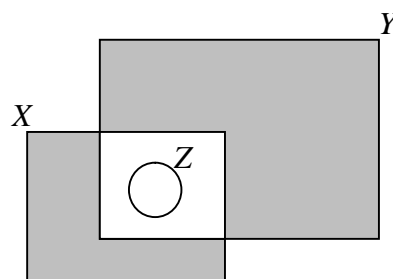
A



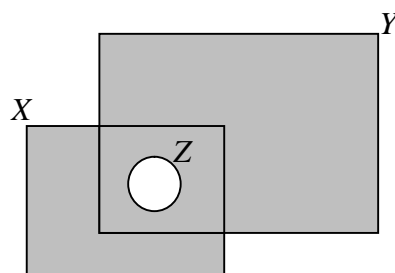
B



C



D





- 34 Diagram 17 is a Venn diagram showing the number of elements in set  $F$ , set  $G$  and set  $H$ .

*Rajah 17 ialah gambar rajah Venn yang menunjukkan bilangan unsur-unsur dalam set  $F$ , set  $G$  dan set  $H$ .*

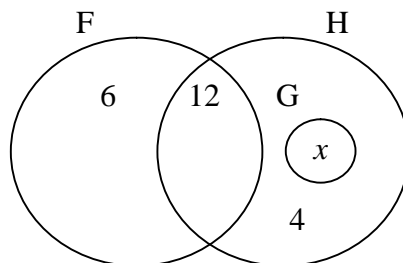


Diagram 17  
Rajah 17

Given that the universal set  $\xi = F \cup G \cup H$  and  $n(H') = n(G \cap H)$ , find the value of  $x$ .

*Diberi bahawa set semesta  $\xi = F \cup G \cup H$  dan  $n(H') = n(G \cap H)$ , cari nilai bagi  $x$ .*

- A 4  
B 6  
C 8  
D 12
- 35 Given that the gradient of the straight line passing through point  $A(p, 8)$  and point  $B(1, 4)$  is 2. Find the value of  $p$ .
- Diberi bahawa kecerunan satu garis lurus yang melalui titik  $A(p, 8)$  dan  $B(1, 4)$  ialah 2. Cari nilai  $p$ .*

- A -2  
B -3  
C 3  
D 4

- 36 The y-intercept of the straight line  $3x + 4y = -7$  is

*Pintasan-y bagi satu garis lurus  $3x + 4y = -7$  ialah*

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

- 37 In Diagram 18, the straight line  $GH$  is parallel to the straight line  $PR$ . Find the value of  $k$ .

*Dalam Rajah 18, garis lurus  $GH$  adalah selari dengan garis lurus  $PR$ . Cari nilai  $k$ .*

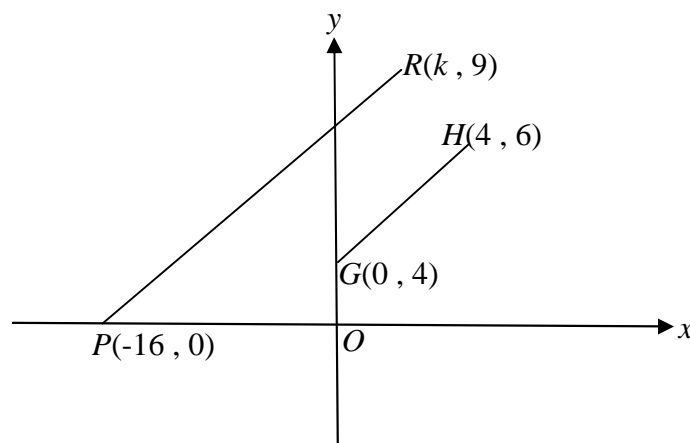


Diagram 18  
Rajah 18

- A 2
- B 3
- C 4
- D 6

- 38 Diagram 19 shows 12 identical cards, each labelled with the digit 2, 5, or 9. A card is chosen at random. State the probability that the card chosen is labelled with a prime number.

*Rajah 19 menunjukkan 12 keping kad yang serupa yang setiapnya dilabel 2, 5, atau 9. Sekeping kad dipilih secara rawak. Nyatakan kebarangkalian bahawa kad yang dipilih itu dilabel dengan nombor perdana.*

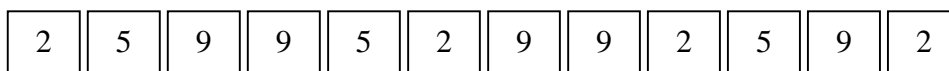


Diagram 19  
*Rajah 19*

- A  $\frac{1}{4}$   
B  $\frac{2}{3}$   
C  $\frac{5}{12}$   
D  $\frac{7}{12}$
- 39 A bag contains 18 blue balls and a number of green balls. If a ball is chosen at random, the probability of choosing a blue ball is  $\frac{1}{3}$ . Find the total number of balls in the bag.
- Sebuah beg mengandungi 18 bola biru dan beberapa bola hijau. Jika satu bola dipilih secara rawak, kebarangkalian sebiji bola biru dipilih ialah  $\frac{1}{3}$ . Cari jumlah bola di dalam beg itu.*
- A 6  
B 12  
C 36  
D 54

- 40 Table 1 shows the results of a Mathematics test of a group of students.

*Jadual 1 menunjukkan keputusan ujian Matematik bagi sekumpulan pelajar.*

	Boys <i>Lelaki</i>	Girls <i>Perempuan</i>
Passed <i>Lulus</i>	16	32
Failed <i>Gagal</i>	$x$	5

Table 1  
*Jadual 1*

A student is chosen at random from the group. The probability of choosing a student who passed the test is  $\frac{4}{5}$ . Find the value of  $x$ .

*Seorang pelajar dipilih secara rawak daripada kumpulan itu. Kebarangkalian memilih seorang pelajar yang lulus ujian ialah  $\frac{4}{5}$ . Cari nilai  $x$ .*

- A 4
- B 5
- C 7
- D 10

**END OF QUESTION PAPER**  
***KERTAS SOALAN TAMAT***

**JABATAN PELAJARAN MELAKA**  
**PEPERIKSAAN SELARAS AKHIR TAHUN**  
**TINGKATAN 4, 2010**

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**MATHEMATICS**

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**SKEMA PEMARKAHAN**

MATHEMATICS PAPER 1

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