

1449/1
Mathematics
Kertas 1
Oktober 2008
1 1/4 jam

Nama:.....
Tingkatan:.....



JABATAN PELAJARAN SEGAMAT

PEPERIKSAAN AKHIR TAHUN SETARA SEGAMAT TINGKATAN 4
2008

MATHEMATICS

Kertas 1

Satu jam lima belas minit

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

1. Kertas soalan ini adalah dalam dwibahasa
2. Soalan di bahagian atas adalah dalam bahasa Inggeris, diikuti oleh bahasa Melayu.
3. Penggunaan kalkulator dibenarkan

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

RELATIONS

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

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

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

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

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

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

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

8 Midpoint

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

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

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

$$11 \quad \text{Mean} = \frac{\text{Sum of (midpoint of interval} \times \text{frequency)}}{\text{Sum of frequencies}}$$

12 Pythagoras Theorem

$$c^2 = a^2 + b^2$$

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

$$14 \quad m = -\left(\frac{y - \text{int } ercept}{x - \text{int } ercept} \right)$$

SHAPE 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 = πr^2
4. Curved surface area of cylinder = $2\pi rh$
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.

1. Diagram 1 shows three squares.

Rajah 1 menunjukkan tiga segitiga sama.

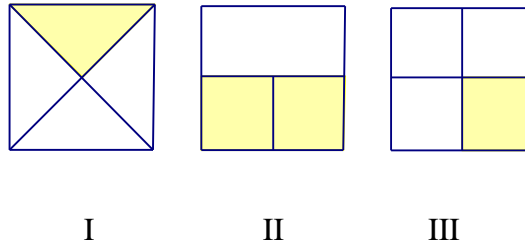


Diagram 1

Rajah 1

Which of the squares have one line of symmetry each

Manakah antara segitiga berikut mempunyai satu garisan simetri sahaja

- A. I only.
- B. I and III only.
- C. II and III only
- D. I, II and III

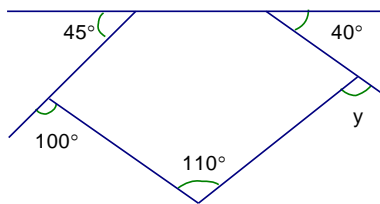


Diagram 2

Rajah 2

2. In the Diagram 2, the value of y is

Dalam rajah 2, nilai y ialah

- A. 100°
- B. 105°
- C. 120°
- D. 145°

3. In Diagram 3, $PQ'R'S'$ is an image of $PQRS$ under a certain enlargement.

Dalam Rajah 3, $PQ'R'S'$ ialah imej bagi $PQRS$ di bawah sesuatu pembesaran.

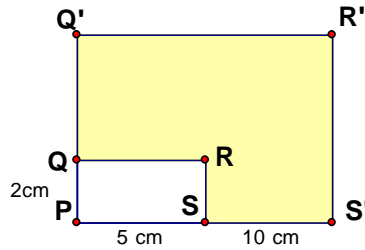


Diagram 3

Rajah 3

Calculate the area of the shaded region, in cm^2 .

Kira luas bagi kawasan berlorek, dalam unit cm^2 .

- A. 50
- B. 64
- C. 80
- D. 90

4. Diagram 4 shows a circle with centre O .

Rajah 4 menunjukkan sebuah bulatan berpusat di O .

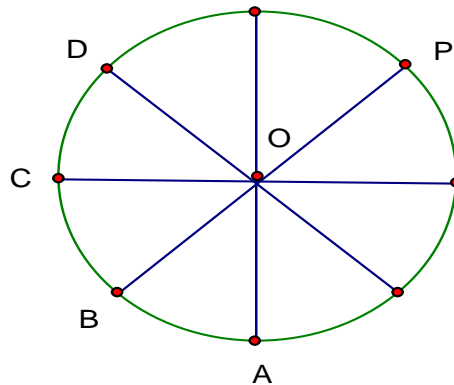


Diagram 4

Rajah 4

The angle as its centre is divided into eight equal parts. Which of the points, A, B, C or D is the image of P under a rotation of 135° clockwise about the centre O?

Sudut yang berpusat di O telah dibahagi kepada lapan bahagian yang sama besar. Yang manakah antara titik A, B, C atau D merupakan imej bagi P di bawah satu putaran 135° mengikut arah jam yang berpusat di O?

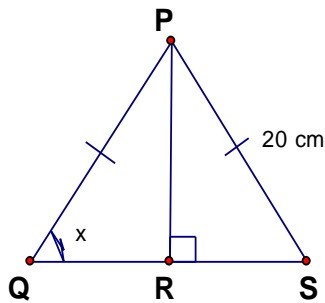


Diagram 5

Rajah 5

5. In the diagram 5, PQS is an isosceles triangle. Given that $\sin x = \frac{4}{5}$, find the length, in cm of QS.

Dalam Rajah 5, PQR adalah segitiga sama kaki. Diberi $\sin x = \frac{4}{5}$, cari nilai panjang, dalam unit cm bagi OS.

- A. 16
- B. 20
- C. 24
- D. 28

6. The sides of a rectangular field is $(3h + 4)m$ and $(5h - 3)m$. Calculate the perimeter, in m, of the field.

Dua sisi bagi segiempat tepat ialah $(3h + 4)m$ dan $(5h - 3)m$. Kirakan perimeter padang, dalam m

- A. $2h + 1$
 B. $8h + 1$
 C. $16h + 2$
 D. $16h + 4$
7. Diagram 6 shows a triangle PQR .

Rajah 6 menunjukkan segitiga PQR .

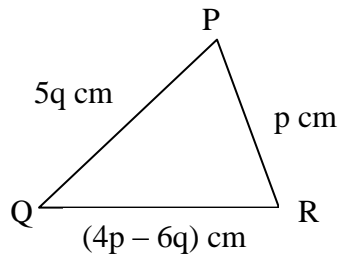


Diagram 6
Rajah 6

Calculate the perimeter, in cm, of the triangle.

Kira perimeter, dalam cm bagi segitiga tersebut.

- A. $5p - 11q$
 B. $5p - q$
 C. $3p - 11q$
 D. $3p - q$

8. Given that $5p = 4m + 3$, then $m =$

Diberi $5p = 4m + 3$, maka $m =$

A. $\frac{5p}{4} - 3$

B. $\frac{5p - 3}{4}$

C. $\frac{5p}{4} + 3$

D. $\frac{5p + 3}{4}$

9. $\frac{3}{5x} - \frac{x-2}{10x} =$

A. $\frac{1-x}{2x}$

B. $\frac{-x-1}{5x}$

C. $\frac{8-x}{10x}$

D. $\frac{4-5x}{50x}$

10. Given that $2x - 3y = 13$ and $2x + y = 1$, then $y =$

Diberi $2x - 3y = 13$ dan $2x + y = 1$, maka $y =$

A. -3

B. -7

C. 2

D. 4

11. Which of the following is a solution of $x + 2y = 4$?

Yang manakah antara berikut merupakan penyelesaian bagi $x + 2y = 4$?

A. $x = 1, y = 3$

B. $x = 4, y = 4$

C. $x = 2, y = 2$

D. $x = 2, y = 1$

12. $(-3x^2)^2 \div (x^{-3})^2 =$

A. $9x^{10}$

B. $6x^9$

C. $-6x^{13}$

D. $3x^{10}$

13. Which of the following is true?

Yang manakah antara berikut adalah benar?

A. $4cb \div 4c^3 = 4c^3$

B. $3^{\frac{1}{3}} \times 3^{\frac{1}{3}} \div 3 = 1$

C. $2^{\frac{1}{2}} \times 2^{\frac{3}{2}} = 4$

D. $m^{-3} \times m^{-2} \div m^{-1} = m^{-5}$

14. The solution to the simultaneous linear inequalities $2x - y \leq 8$ and $-x < 4$ is

Penyelesaian bagi ketaksamaan serentak linear $2x - y \leq 8$ dan $-x < 4$ adalah

- A. $-4 < x \leq 2$
- B. $-3 \leq x < 6$
- C. $-3 \leq x \leq 6$
- D. $-4 < x \leq 6$

15. Given that $8 < 3x - 1 < 14$, the possible value of x is

Diberi $8 < 3x - 1 < 14$, nilai yang mungkin bagi x adalah

- A. 4
- B. 3
- C. 6
- D. 5

16. Table 1 shows the frequency of scores in a competition.

Jadual 1 menunjukkan kekerapan kejayaan bagi sesuatu pertandingan.

Score <i>Skor</i>	0	1	2	3	4
Frequency <i>Frekuensi</i>	5	8	10	6	8

Table 1
Jadual 1

What is the mode of the data?

Apakah kekerapan tertinggi bagi data di atas?

- A. 1
- B. 4
- C. 2
- D. 8

17. Diagram 7 is a pie chart which shows the combined number of plain paper and colour paper in tray P and tray Q. Table 2 shows the number of papers in tray P but not the number of papers in tray Q.

Rajah 7 ialah sebuah carta pai yang menunjukkan jumlah kertas putih dan kertas berwarna dalam bekas P dan Q. Jadual 2 menunjukkan bilangan kertas putih di dalam bekas P tetapi bilangan kertas berwarna tidak diberi.

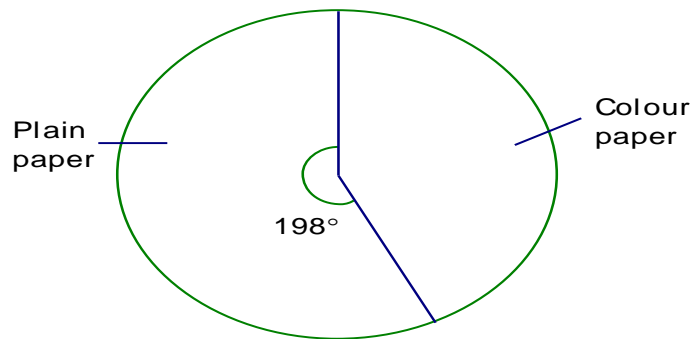


Diagram 7

Rajah 7

Tray \ Paper	Paper	
	Plain Paper	Colour Paper
Tray P	300	120
Tray Q		
Total	550	

Table 2
Jadual 2

Calculate the number of paper in tray Q.

Kira bilangan kertas di dalam bekas Q.

- A. 250
- B. 330
- C. 450
- D. 580

18. The number of story books owned by Hanna, Ruby and Azlan is in the ratio of 3 : 7 : 8. The difference between the number of story books owned by Hanna and Ruby is 24. Calculate the number of story books owned by Azlan.

Nisbah bilangan buku cerita yang dipunyai oleh Hanna, Ruby dan Azlan ialah 3 : 7 : 8. Perbezaan bilangan buku cerita yang dipunyai oleh Hanna dan Ruby ialah 24. Kira bilangan buku cerita yang dipunyai oleh Azlan.

A 48

B 42

C 18

D 60

19. If $(3.5 \times 10^2)^m = 6.95 \times 10^{-3}$, find the value of m in standard form.

Jika $(3.5 \times 10^2)^m = 6.95 \times 10^{-3}$, cari nilai m dalam bentuk piawai.

A 1.986×10^{-5}

B 1.762×10^{-1}

C 5.036×10^4

D 5.036×10^{-2}

20. The circumference of a circle with radius, $r = 3.2361$ in cm (assume $\Pi = 3.142$).

Ukur lilitan bulatan dengan jejari, $r = 3.2361$ dalam cm. (anggap $\Pi = 3.142$).

A 2.034×10^1 cm

B 3.290×10^1 cm

C 1.017×10^1 cm

D 5.084×10^0 cm

21. Evaluate $(6.5 \times 10^{-4}) - 6.81 \times 10^{-5}$

Nilaikan $(6.5 \times 10^{-4}) - 6.81 \times 10^{-5}$

A -0.31×10^{-9}

B 5.819×10^{-4}

C -6.16×10^5

D 3.1×10^1

22. Evaluate $4.7 \times 10^{-2} \times 6.5 \times 10^3$

Nilaikan $4.7 \times 10^{-2} \times 6.5 \times 10^3$

A 3.055×10^1

B 3.055×10^{-1}

C 305.5

D 3.0×10^2

23. $(p+4)(2-3p)$.

A $8-10p-3p^2$

B $8+8p-3p^2$

C $3p^2-8p+8$

D $3p^2+8p+8$

24. Factorize completely $y^2 + y - 6$.

Faktorkan selengkapnya $y^2 + y - 6$.

- A $(y+3)(y-2)$
- B $(y+2)(y-3)$
- C $(y+6)(y-1)$
- D $(y-6)(y+1)$

25. Diagram 8 is a Venn diagram which shows the elements of sets P , Q and R .

Rajah 8 ialah gambar rajah Venn yang menunjukkan unsur-unsur bagi set P , Q dan R .

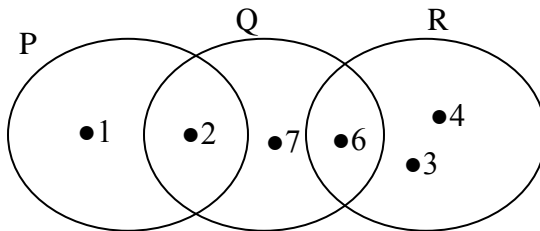


Diagram 8
Rajah 8

If the universal set $\xi = P \cup Q \cup R$, then set Q' is

Jika set semesta $\xi = P \cup Q \cup R$, maka set Q' ialah

- A $\{3, 4\}$
- B $\{2, 6\}$
- C $\{1, 3, 4\}$
- D $\{2, 7, 6\}$

26. Diagram 9 is a Venn diagram with the universal set $\xi = P \cup Q \cup R$.

Rajah 9 ialah gambar rajah Venn dengan set semesta $\xi = P \cup Q \cup R$.

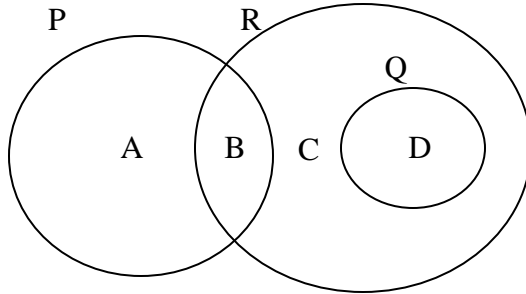


Diagram 9
Rajah 9

Which of the region, A, B, C or D, represents the set $P \cap Q' \cap R'$?

Antara kawasan A, B, C dan D, yang manakah mewakili set $P \cap Q' \cap R'$?

27. Diagram 10 is a Venn diagram which shows the universal set ξ , set F and set G .

Rajah 10 ialah gambar rajah Venn yang menunjukkan set semesta ξ , set F dan set G .

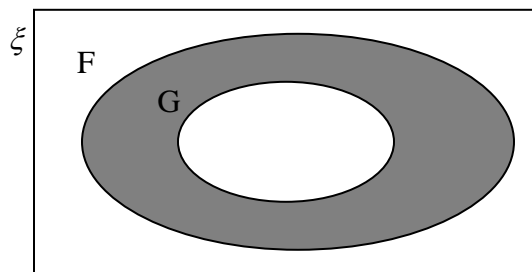


Diagram 10
Rajah 10

The shaded region in the Venn diagram represents the set

Kawasan yang berlorek dalam gambar rajah Venn itu mewakili set

A $(F \cup G)'$

B $F \cup G$

C $F \cap G'$

D $F \cap G$

28. The gradient of the straight line $2x - 6y = 9$ is

Kecerunan bagi garis lurus $2x - 6y = 9$ ialah

A $-\frac{2}{3}$

B $\frac{1}{3}$

C $\frac{2}{3}$

D 3

29. In Diagram 11, PQ is a straight line with gradient $\frac{1}{2}$.

Dalam Rajah 11, PQ ialah garis lurus dengan kecerunan $\frac{1}{2}$.

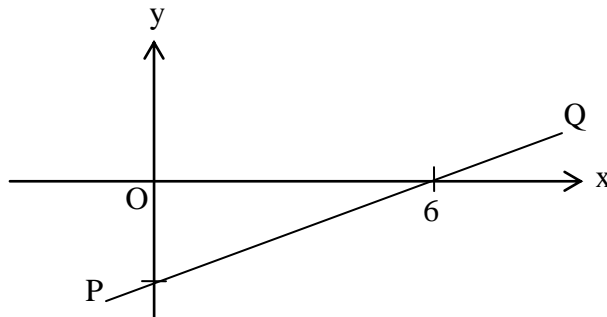


Diagram 11
Rajah 11

Find the y-intercept of the straight line PQ.

Carikan pintasan-y bagi garis lurus PQ.

- A -12
- B 3
- C -3
- D 12

30. Table 3 shows the score obtained by a group of students in a mathematics quiz.

Jadual 3 menunjukkan markah yang diperolehi oleh sekumpulan pelajar di dalam kuiz matematik.

Score <i>Markah</i>	Number of Students <i>Bilangan Pelajar</i>
1 - 3	4
4 - 6	5
7 - 9	3
10 - 12	x
13 - 15	2

Table 3
Jadual 3

Calculate the value of x if the mean score is 7.55

Kirakan nilai x jika min markah ialah 7.55

- A 3
- B 4
- C 5
- D 6

31. Table 4 is a frequency table which shows the sizes of fish caught by a fisherman.

Jadual 4 ialah jadual kekerapan yang menunjukkan saiz tangkapan ikan oleh seorang nelayan.

Size (cm) <i>Saiz (cm)</i>	Frequency <i>Kekerapan</i>
11 - 15	3
16 - 20	8
21 - 25	10
26 - 30	9

Table 4

Jadual 4

State the modal class.

Nyatakan kelas mod.

- A 16 – 20
- B 21.5 – 25.5
- C 25.5 – 30.5
- D 21 – 25

32. In Diagram 12, HEK is a tangent to a circle EFG at E. The length of arc EG is equal to the length of arc GF.

Dalam Rajah 12, HEK ialah tangen kepada bulatan EFG di E. Panjang lengkok EG adalah sama panjang dengan panjang lengkok GF.

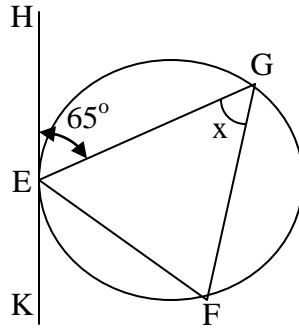


Diagram 12
Rajah 12

Find the value of x .

Carikan nilai x .

- A 35°
- B 40°
- C 45°
- D 50°

33. In Diagram 13, UVW is a tangent to a circle with centre O .

Dalam Rajah 13, UVW ialah tangen kepada bulatan berpusat O .

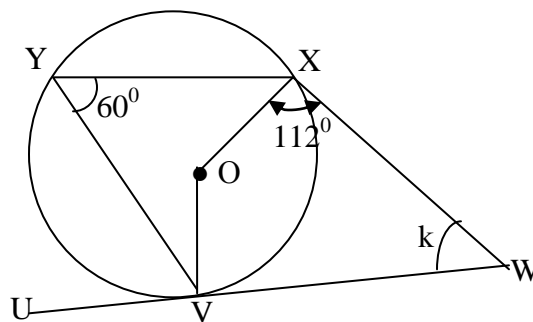


Diagram 13
Rajah 13

The value of k is

Nilai k ialah

- A 38°
- B 40°
- C 42°
- D 44°

34. Diagram 14 shows the graph of $y = \sin x$.

Rajah 14 menunjukkan graf $y = \sin x$.

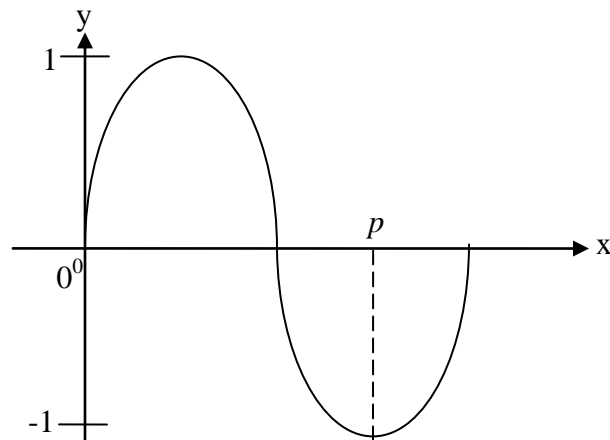


Diagram 14
Rajah 14

The value of p is

Nilai p ialah

- A 90°
- B 180°
- C 270°
- D 360°

35. In Diagram 15, FGH is a straight line.

Dalam Rajah 15, FGH ialah garis lurus.

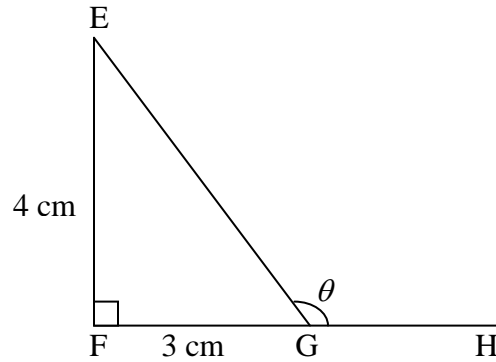


Diagram 15
Rajah 15

What is a value of $\cos \theta^\circ$?

Apakah nilai kos θ° ?

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

36. In Diagram 16, KMN is a straight line.

Dalam Rajah 16, KMN ialah garis lurus.

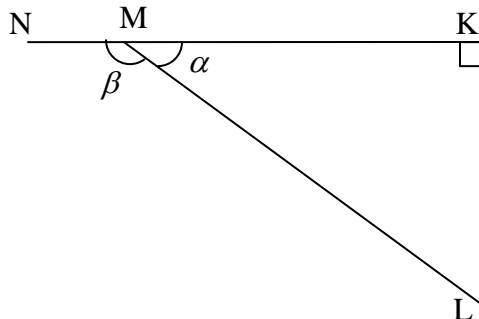


Diagram 16
Rajah 16

Given $\cos \alpha = \frac{12}{13}$. The value of $\tan \beta$ is

Diberi $\cos \alpha = \frac{12}{13}$. Nilai bagi $\tan \beta$ ialah

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

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

C $\frac{5}{13}$

D $\frac{12}{13}$

37. In Diagram 17, PQ and TR are two vertical poles on a horizontal plane. S is a point on TR such that $PQ = SR$.

Dalam Rajah 17, PQ dan TR ialah dua batang tiang tegak pada satah mengufuk.

S adalah satu titik di atas TR dengan keadaan $PQ = SR$

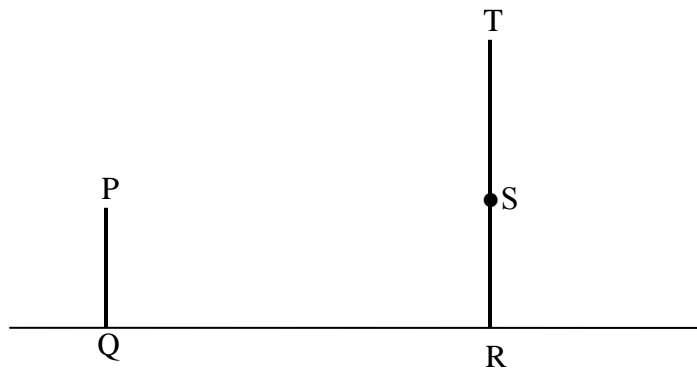


Diagram 17
Rajah 17

The angle elevation of T from P is

Sudut dongakan T dari P ialah

- A $\angle QTS$
- B $\angle RPT$
- C $\angle PTS$
- D $\angle TPS$

38. In Diagram 18, QR is a vertical flag pole. PQ is horizontal.

Dalam Rajah 18, QR ialah sebatang tiang bendera tegak. PQ adalah mengufuk.

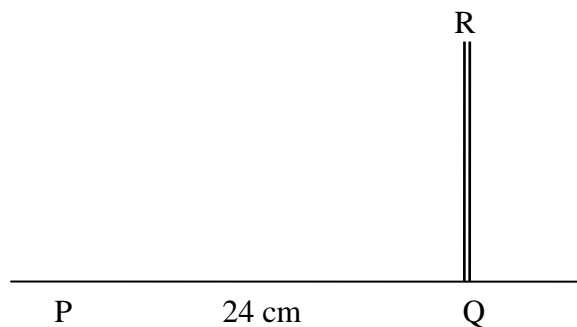


Diagram 18

Rajah 18

The angle of elevation of R from P is 38° . The height, in m, of the flag pole is

Sudut dongakan R dari P ialah 38° . Tinggi, dalam m, tiang bendera itu ialah

- A 18.15
- B 19.25
- C 18.75
- D 18.95

39. Diagram 19 shows a cuboid with a horizontal base ABCD.

Rajah 19 menunjukkan sebuah kuboid dengan tapak mengufuk ABCD.

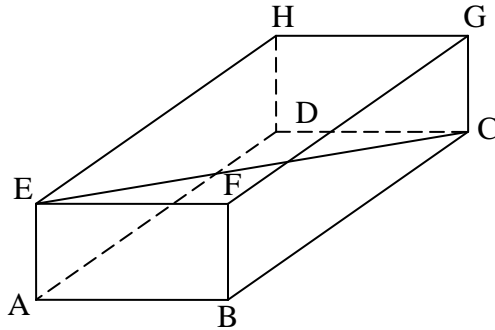


Diagram 19

Rajah 19

The angle between line CE and plane EFGH is

Sudut di antara garis CE dan satah EFGH ialah

- A $\angle CGE$
- B $\angle CEG$
- C $\angle CEA$
- D $\angle CAE$

40. Diagram 20 shows a cube with a horizontal base ABCD.

Rajah 20 menunjukkan sebuah kubus dengan tapak mengufuk ABCD.

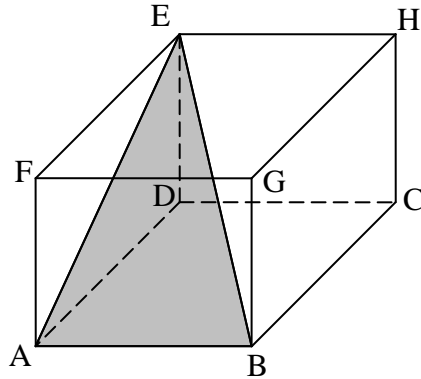


Diagram 20
Rajah 20

Name the angle between plane ABE and plane ABCD.

Namakan sudut di antara satah ABE dan satah ABCD.

- A $\angle DBE$
- B $\angle DAE$
- C $\angle ADE$
- D $\angle AED$

THE END OF QUESTIONS

KERTAS SOALAN TAMAT

ANSWERS FOR PAPER 1 (MATHEMATICS FORM 4 2008)

NO.	ANSWER
1	D
2	B
3	B
4	A
5	C
6	B
7	B
8	B
9	C
10	A
11	D
12	A
13	C
14	D
15	A
16	C
17	D
18	A
19	A
20	A
21	B
222	C
23	A
24	A
25	C
26	A
27	D
28	B
29	C
30	D
31	D
32	D
33	A
34	C
35	C
36	B
37	D
38	C
39	B
40	B