

Provided by: SureSuccess.NG

Mathematics

1983 - 2004

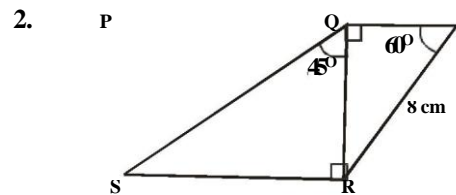
JAMB

Past Questions

Mathematics 1983

1. If M represents the median and D the mode of the measurements 5, 9, 3, 5, 8 then (M,D) is 10. If $x + 2$ and $x - 1$ are factors of the expressions $lx +$
- A. (6,5) B. (5,8) C. (5,7)
D. (5,5) E. (7,5)
2. A construction company is owned by two partners X and Y and it is agreed that their profit will be divided in the ratio 4:5. at the end of the year. Y received #5,000 more than x. what is the total profit of the company for the year?
- A. #20,000.00 B. #25,000.00 C. #30,000.00
D. #15,000.00 E. #45,000.00

3. Given a regular hexagon, calculate each interior angle of the hexagon.
- A. 60° B. 30° C. 120°
D. 45° E. 135°
4. Solve the following equations
 $4x - 3 = 3x + y = 2y + 5x - 12$
- A. $4x = 5, y = 2$ B. $x = 2, y = 5$ C. $x = -2, y = -5$
D. $x = 5, y = -2$ E. $x = -5, y = -2$
5. If $x = 1$ is root of the equation $x^3 - 2x^2 - 5x + 6$, find the other roots
- A. -3 and 2 B. -2 and 2 C. 3 and -2
D. 1 and 3 E. -3 and 1



6. If x is jointly proportional to the cube of y and the fourth power of z. In what ratio is x increased or decreased when y is halved and z is doubled? A. 4:1 increase B. 2:1 increase C. 1:4 decrease
- D. 1:1 no change E. 3:4 decrease
- In the above figure $PQR = 60^\circ, QPR = 90^\circ, PRS = 90^\circ, RPS = 45^\circ, QR = 8\text{cm}$. Determine PS
- A. $2\sqrt{3}\text{cm}$ B. $4\sqrt{6}\text{cm}$ C. $2\sqrt{6}\text{cm}$
D. $8\sqrt{6}\text{cm}$ E. 8cm

8. Given that $\cos z = L$, where z is an acute angle find an expression for $\frac{\cos z + \csc z}{\sec z + \tan z}$
- A. $\frac{1-L}{1+L}$ B. $\frac{L^2-1}{L^2+L-1}$ C. $\frac{L-1}{(L+1)+\sqrt{1-L^2}}$
D. $\frac{L-1}{(L+L^2)+\sqrt{1-L^2}}$ E. $\frac{L(L^2-1)}{1+\sqrt{1-L^2}+\sqrt{1-L^2}}$

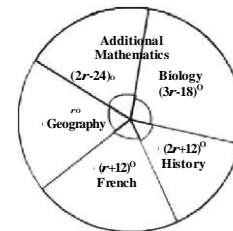
$2kx^2 + 24$, find the values of l and k

- A. $l = -6, k = -9$ B. $l = -2, k = 1$ C. $l = -2, k = -1$
D. $l = 0, k = 1$ E. $l = 6, k = 0$

11. Make T the subject of the equation

$$av = \frac{3}{1-V} \frac{2V+T}{a+2T}$$

12.



- A. $3av/(1-v)$ B. $2v(1-v)^2 - a^2v^2/2a^2v^2 - (1-v)^2$
C. $2v(1-v)^2 + a^3v^2/2a^2v^2 + (1-v)^2$
D. $2v(1-v)^2 - a^4v^3/2a^3v^3 - (1-v)^3$
E. $2v(1-v)^3 - a^4v^3/2a^3v^3 + (1-v)^3$

In a class of 60 pupils, the statistical distribution of the number of pupils offering Biology, History, French, Geography and Additional Mathematics is as shown in the pie chart above. How many pupils offer Additional Mathematics?

- A. 15 B. 10 C. 18
D. 12 E. 28

B. The value of $(0.303)^3 - (0.02)^3$ is

- A. 0.019 B. 0.0019 C. 0.00019
D. 0.000019 E. 0.000035

14. y varies partly as the square of x and y partly as the inverse of the square root of x. write down the expression for y if $y = 2$ when $x = 1$ and $y = 6$ when $x = 4$

- A. $y = \frac{10x^2 + 52}{31\sqrt{x}}$ B. $y = x^2 + 1$
C. $y = x^2 + 1$ D. $y = x^2 + 1$ E. $y = \frac{10}{31}(x^2 + 1)$

15. Simplify $(x-7)/(x^2-9) \cdot (x^2-3x)/(x^2-49)$

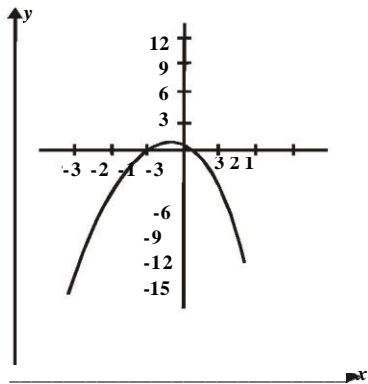
A. $x/(x-3)(x+7)$ B. $(x+3)(x+7)/x$ C. $x/(x-3)(x-7)$
D. $x/(x+3)(x+7)$ E. $x/(x+4)(x+7)$

16. The lengths of the sides of a right-angled triangle at $(3x + 1)\text{cm}, (3x - 1)\text{cm}$ and $x\text{cm}$.

- A. 2 B. 6 C. 18
D. 12 E. 0

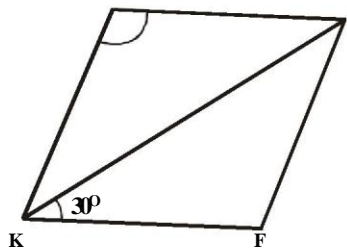
17. The scores of a set of a final year students in the first semester examination in a paper are 41,29,55,21,47,70,70,40,43,56,73,23,50,50. find the median of the scores.
9. If $0.0000152 \times 0.00042 = A \times 10^8$, where $1 \leq A < 10$, find A and B.
- A. $A=9, B=6.38$ B. $A=6.38, B=-9$ C. $A=6.38, B=9$ D. $A=6.38, B=-1$ E. $A=6.38, B=1$
- A. 47 B. 48 C. 50 D. 48 E. 49

18.



Which of the following equations represents the above graph?

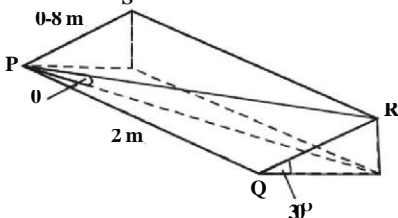
- A. $y = 1 + 2x + 3x^2$ B. $y = 1 - 2x + 3x^2$ C. $y = 1 + 2x - 3x^2$
 D. $y = 1 - 2x - 3x^2$ E. $y = 3x^2 + 2x - 1$



The above figure FGHK is a rhombus. What is the value of the angle x ?

- A. 90° B. 30° C. 150°
 D. 120° E. 60°

20.



PQRS is a desk of dimensions 2m x 0.8m which is inclined at 30° to the horizontal. Find the inclination of the diagonal PR to the horizontal.

- A. $23^\circ 35'$ B. 30° C. $15^\circ 36'$
 D. 10° E. $10^\circ 42'$

21.

Find x if $(x_{\text{base } 4})_2 = 100$ $1000_{\text{base } 2}$

- A. 6 B. 12 C. 100
 D. 210 E. 110

22.

Simplify $\log_{10} a^{1/2} + 1/4 \log_{10} a - 1/12 \log_{10} a^7$

- A. 1 B. $7/6 \log_{10} a$ C. 0
 D. 10 E. a

23.

If w varies inversely as V and u varies directly as w^3 , find the relationship between u and V given that $u = 1$, when $V = 2$

- A. $u = 8V^3$ B. $u = \frac{1}{2} V$ C. $V = 8/u^2$
 D. $V = 8u^2$ E. $U = 8/\sqrt{3}$

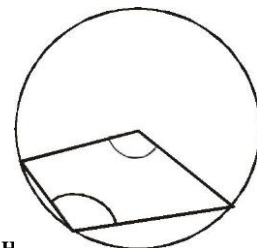
- A. $-28,7$ B. $6,28$ C. $6,-1$
 D. $-1,7$ E. $3,2$

25. Find the missing value in the following table.

x	-2	-1	0	1	2	3
$y = x^{30} - x + 3$		3	3	3	9	27

- A. 3 B. 3 C. -9
 D. 8 E. 9

26.



19.

If O is the centre of the circle in the figure above. Find the value of x

- A. 50 B. 260 C. 100
 D. 65 E. 130

27.

Find the angle of the sectors representing each item in a pie chart of the following data. 6,10,14,16,26

- A. $15^\circ, 25^\circ, 35^\circ, 40^\circ, 65^\circ$ B. $60^\circ, 100^\circ, 140^\circ, 160^\circ, 260^\circ$
 C. $6^\circ, 10^\circ, 14^\circ, 16^\circ, 26^\circ$ D. $30^\circ, 50^\circ, 70^\circ, 80^\circ, 130^\circ$
 E. None of the above

28.

The scores of 16 students in a Mathematics test are 65,65,55,60,60,65,60,70,75,70,65,70,60,65,65,70. What is the sum of the median and modal scores?

- A. 125 B. 130 C. 140
 D. 150 E. 137.5

29.

The letters of the word MATRICULATION are cut and put into a box. One of the letter is drawn at random from the box. Find the probability of drawing a vowel.

- A. $2/13$ B. $5/13$ C. $6/13$
 D. $8/13$ E. $4/13$

30.

Correct each of the number 59.81789 and 0.0746829 to three significant figures and multiply them, giving your answer to three significant figures.

- A. 4.46 B. 4.48 C. 4.47
 D. 4.49 E. 4.50

31.

If a rod of length 250cm is measured as 255cm longer in error, what is the percentage error in measurement?

- A. 55 B. 10 C. 5
 D. 4 E. 2

32.

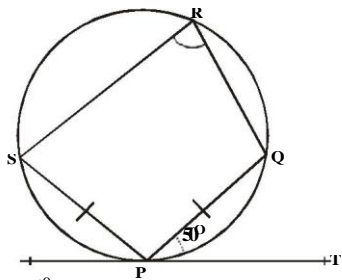
If $(2/3)m (3/4)n = 256/729$, find the values of m and n
 A. $m=4, n=2$ B. $m=-4, n=-2$ C. $m=-4, n=2$
 D. $m=4, n=-2$ E. $m=-2, n=4$

24. Solve the simultaneous equations for x
 $x^2 + y - 8 = 0$
 $y + 5x - 2 = 0$

3

Without using tables find the numerical value of $\log_7 49$
 $+ \log_7(1/7)$

- A. 1 B. 2 C. 3
D. 7 E. 0



- A. 50° B. 40° C. 110°
 D. 80° E. 100°

36. PQRS is a cyclic quadrilateral in which $PQ = PS$. PT is a tangent to the circle and PQ makes an angle 50° with the tangent as shown in the figure below. What is the size of QRS ?

37. A ship H leaves a port P and sails 30km due South. Then it sails 60km due west. What is the bearing of H from P?

- A. $26^\circ 34'$ B. $243^\circ 26'$ C. $116^\circ 34'$
 D. $63^\circ 26'$ E. 240°

38. In a sample survey of a university community the following table shows the percentage distribution of the number of members per household.

No of members per household	1	2	3	4	5	6	7	8	Total
Number of households	3	12	15	28	21	10	7	4	100

- A. 4 B. 3 C. 5
 D. 45 E. None

39. On a square paper of length 2.524375cm is inscribed a square diagram of length 0.524375. find the area of the paper not covered by the diagram correct to 3 significant figures.

- A. 6.00cm^2 B. 6.10cm^2 C. $6.\text{cm}^2$
 D. 6.09cm^2 E. 4.00cm^2

40. If $f(x) = 1 + \frac{x-1}{x^2-1}$ find $f(1-x)$

- C. $-1/x - 1/(x-2)$ D. $-1/x + 1/(x^2-1)$

34. Factorize completely $81a^4 - 16b^4$
 41. In the figure below find PRQ

3
a

+

2

b

)

(

2

a

- 3b) $(9a^2 + 4b^2)$

B. $(3a - 2b)(2a - 3b)(4a^2 - 9b^2)$

C. $(3a - 2b)(3a - 2b)(9a^2 + 4b^2)$

D. $(3a - 2b)(2a - 3b)(9a^2 + 4b^2)$

E. $(3a - 2b)(2a - 3b)(9a^2 - 4b^2)$

35. One interior angle of a convex hexagon is 170° and each of the remaining interior angles is equal to x° . find x

A. 120° B. 110° C. 105°

D. 102° E. 100°

D. 105° E. 65°

42. Simplify $27a^9/8$

A. $9a^2/2$ B. $9a^3/2$ C. $2/3a^2$

D. $2/3a^2$ E. $3a^3/2$

The farm yields of four crops on a piece of land in Ondo are represented on the pie chart above. What is the angle of the sector occupied by Okro in the chart?

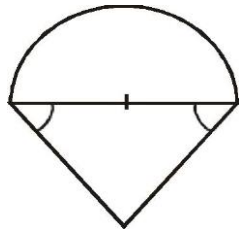
- A. $91\frac{1}{2}^{\circ}$ B. $19\frac{1}{3}^{\circ}$ C. $33\frac{1}{3}^{\circ}$
 D. 11° E. 91°

In the figure above, PQR is a straight line. Find the values of x and y

- A. $x = 22.5^{\circ}$ and $y = 33.75^{\circ}$
 B. $x = 15^{\circ}$ and $y = 52.5^{\circ}$
 C. $x = 22.5^{\circ}$ and $y = 45.0^{\circ}$
 D. $x = 56.25^{\circ}$ and $y = 11.5^{\circ}$
 E. $x = 18.0^{\circ}$ and $y = 56.5^{\circ}$

45. PQR is the diameter of a semicircle RSP with centre at Q and radius of length 3.5cm. if $\angle QPT = \angle QRT = 60^{\circ}$. Find the perimeter of the figure (PTRS $p = \frac{22}{7}$)

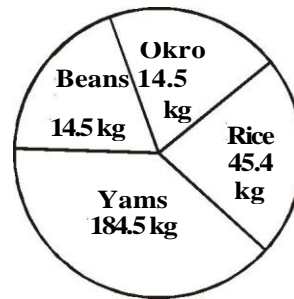
S



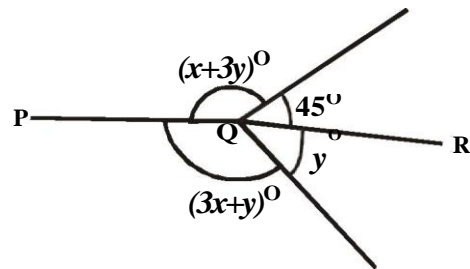
T

- A. 25cm B. 18cm C. 36cm
 D. 29cm E. 25.5 cm

43.



44.





46. In a triangle PQR, QR = 3cm, PR = 3cm, PQ = 3cm and $\angle Q = 30^\circ$. find angles P and R

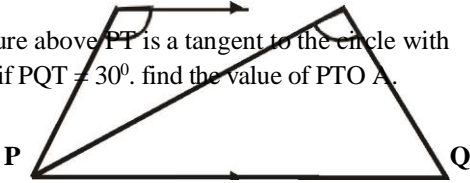
- A. $\angle P = 60^\circ$ and $\angle R = 90^\circ$
- B. $\angle P = 30^\circ$ and $\angle R = 120^\circ$
- C. $\angle P = 90^\circ$ and $\angle R = 60^\circ$
- D. $\angle P = 60^\circ$ and $\angle R = 60^\circ$

130° 100°

- E. $\angle P = 45^\circ$ and $\angle R = 105^\circ$

47.

In the figure above PT is a tangent to the circle with centre O. if $\angle PQT = 30^\circ$. find the value of $\angle PTO$.



In the above diagram if PS = SR and PQ // SR. what is the size of $\angle PQR$?

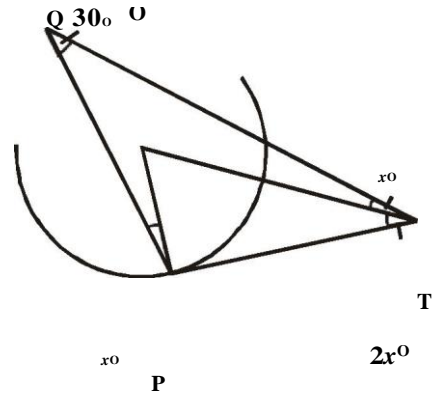
- A. 25° B. 50° C. 55°
- D. 60° E. 75°

48. Find the mean of the following
24.57, 25.63, 25.32, 26.01, 25.77

- A. 25.12 B. 25.30 C. 25.26
- D. 25.50q E. 25.73

- A. $\frac{1}{7}$ B. $\frac{7}{12}$ C. $\frac{1}{3}$
- D. $\frac{3}{7}$ E. $\frac{1}{5}$

49.



- A. 30° B. 15° C. 24°
- D. 12° E. 60°

50.

A man drove for 4 hours at a certain speed, he then doubled his speed and drove for another 3 hours. Altogether he covered 600km. At what speed did he drive for the last 3 hours?

- A. 120km/hr B. 60km/hr C. 600/7km/hr
- D. 50km/hr E. 100km/hr.

Mathematics 1984

1. Simplify $(\frac{2}{3} \cdot \frac{1}{5}) \cdot \frac{1}{3}$ of $\frac{2}{5}$
2. If $263 + 441 = 714$, what number base has been used?
A. 12 B. 11 C. 10
D. 9 E. 8
3. $0.00014323/1.940000 = k \times 10^n$ where $1 \leq k < 10$ and n is a whole number. The values of K and n are
A. 7.381 and -11 B. 2.34 and 10
C. 3.87 and 2 D. 7.831 and -11
E. 5.41 and -2
4. P sold his bicycle to Q at a profit of 10%. Q sold it to R for #209 at a loss of 5%. How much did the bicycle cost P?

6. A man invested a total of #50,000 in two companies. If these companies pay dividend of 6% and 8% respectively, how much did he invest at 8% if the total yield is #3,700?
A. #15,000 B. #29,600 C. #21,400
D. #27,800 E. #35,000
7. Thirty boys and x girls sat for a test. The mean of the boys' scores and that of the girls were respectively 6 and 8. find x if the total score was 468.
A. 38 B. 24 C. 36
D. 22 E. 41
8. The cost of production of an article is made up as follows
Labour #70
Power #15

Materials #30

- A. #200 B. #196 C. #180
D. #205 E. #150

5. If the price of oranges was raised by $\frac{1}{2}k$ per orange, the number of oranges customer can buy for #2.40 will be less by 16. What is the present price of an orange?

- A. $\frac{2}{k}$ B. $\frac{3}{k}$ C. $\frac{5}{k}$

- D. 20k E. $21\frac{1}{2}k$

Miscellaneous #5

Find the angle of the sector representing labour in a pie chart.

- A. 210° B. 105° C. 175°
D. 150° E. 90°

9

Bola chooses at random a number between 1 and 300. What is the probability that the number is divisible by

4?

- A. $\frac{1}{3}$ B. $\frac{1}{4}$ C. $\frac{1}{5}$
D. $\frac{4}{300}$ E. $\frac{1}{300}$

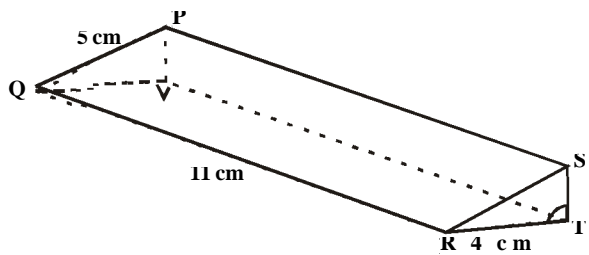
- 10 Find without using logarithm tables, the value of $\frac{\log_3 27 - \log_{1/4} 64}{\log_3 1/81}$
- A. $\frac{7}{4}$ B. $-7/4$ C. $-3/2$
 D. $\frac{7}{3}$ E. $-1/4$
- 11 A variable point P(x, y) traces a graph in a two dimensional plane. (0, -3) is one position of P. If x increases by 1 unit, y increases by 4 units. The equation of the graph is
- A. $-3 = y + 4/x + 1$ B. $4y = -3 + x$
 C. $y/x = -3/4$ D. $y + 3 = 4x$
 E. $4y = x + 3$
- 12 A trader in a country where their currency 'MONT' (M) is in base five bought $103_{(5)}$ oranges at $M14_{(5)}$ each. If he sold the oranges at $M24_{(5)}$ each, what will be his gain?
- A. $M103_{(5)}$ B. $M1030_{(5)}$ C. $M102_{(5)}$
 D. $M2002_{(5)}$ E. $M3032_{(5)}$
- 13 Rationalize $(\sqrt{5} - 7\sqrt{5}) / (\sqrt{7} - \sqrt{5})$
- A. $-2\sqrt{35}$ B. $4\sqrt{7} - 6\sqrt{5}$ C. ~ 35
 D. $4\sqrt{7} - 8\sqrt{5}$ E. $\sqrt{35}$
- 14 Simplify $\frac{3^n - 3_{n-1}}{3^3 \times 3^n - 27 \times 3_{n-1}}$
- A. $\frac{1}{3^n - 3_{n-1}}$ B. $\frac{0}{2/27}$ C. $\frac{1}{27}$
 D. $\frac{1}{3^n - 3_{n-1}}$ E. $\frac{0}{2/27}$
- 15 p varies directly as the square of q and inversely as r. If p = 36, when q = 3 and r = p, find p when q = 5 and r = 2
- A. 72 B. 100 C. 90
 D. 200 E. 125
- 16 Factorise $6x^2 - 14x - 12$
- A. $2(x+3)(3x-2)$ B. $6(x-2)(x+1)$
 C. $2(x-3)(3x+2)$ D. $6(x+2)(x-1)$
 E. $(3x+4)(2x+3)$
- 17 A straight line $y = mx$ meets the curve $y = x^2 - 12x + 40$ in two distinct points. If one of them is (5,5), find the other
- A. (5,6) B. (8,8) C. (8,5)
 D. (7,7) E. (7,5)
- 18 The table below is drawn for a graph $y = x^2 - 3x + 1$

x	-3	-2	-1	0	1	2	3
$y = x^2 - 3x + 1$	1	-1	3	1	-1	3	1

- From $x = -2$ to $x = 1$, the graph crosses the x-axis in the range(s)
- A. $-1 < x < 0$ and $0 < x < 1$
 B. $-2 < x < -1$ and $0 < x < 1$
 C. $-2 < x < -1$ and $0 < x < 1$
 D. $0 < x < 1$ E. $1 < x < 2$

19. In a racing competition. Musa covered a distance of 5xkm in the first hour and (x + 10)km in the next hour. He was second to Ngozi who covered a total distance of 118km in the two hours. Which of the following inequalities is correct?
- A. $0 < -x < 15$ B. $-3 < x < 3$
 C. $15 < x < 18$ D. $0 < x < 15$
 E. $0 < x < 18$
20. $2x + 3y = 1$ and $y = x - 2y = 11$, find (x + y)
- A. 5 B. -3 C. 8
 D. 2 E. 2
21. Tunde and Shola can do a piece of work in 18 days. Tunde can do it alone in x days, whilst Shola takes 15 days longer to do it alone. Which of the following equations is satisfied by x?
- A. $x^2 - 5x - 18 = 0$ B. $x^2 - 20x + 360 = 0$
 C. $x^2 - 21x - 270 = 0$ D. $2x^2 + 42x - 190 = 0$
 E. $3x^2 - 31x + 150 = 0$
22. If $fx = 2(x-3)2 + 3(x-3) - 4$ and $g(y) = \sqrt{5} + y$, find $g\{f(3)\}$ and $g\{f(4)\}$
- A. 3 and 4 B. -3 and 4
 C. -3 and -4 D. 3 and -4
 E. 0 and ~ 5
23. The quadratic equation whose roots are $1 + \sqrt{13}$ and $1 + \sqrt{3}$ is
- A. $x^2 + (1 - 4\sqrt{13})x + 1 + 13 = 0$
 B. $x^2 + (1 - 4\sqrt{13})x + 1 - 13 = 0$
 C. $x^2 + 2x + 12 = 0$ D. $x^2 - 2x + 12 = 0$
 E. $x^2 - 2x - 12 = 0$
24. Find a factor which is common to all three binomial expressions $4a^2 - 9b^2$, $a^3 + 27b^3$, $(4a + 6b)^2$
- A. $4a + 6b$ B. $4a - 6b$
 C. $2a + 3b$ D. $2a - 3b$
 E. none

25.

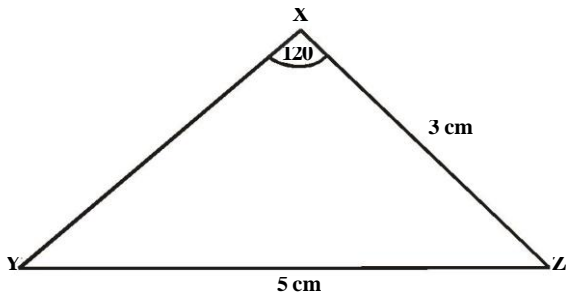


- What is the volume of the regular three dimensional figure drawn above?
- A. 160cm^3 B. 48cm^3 C. 96cm^3
 D. 120cm^3 E. 60cm^3

26. If (x - 2) and (x + 1) are factors of the expression $x^3 + px^2 + qx + 1$, what is the sum of p and q?
- A. 0 B. -3 C. 3
 D. $-17/3$ E. $-2/3$

27. A cone is formed by bending a sector of a circle having an angle of 210° . Find the radius of the base of the cone if the diameter of the circle is base of the cone if the

28



- diameter of the circle is 12cm
 A. 7.00cm B. 1.75cm C. 21cm
 D. 3i0cm E. 2Ö21cm

Using $\triangle XYZ$ in the figure above find $\angle XYZ$

- A. 29° B. $31^\circ 20'$ C. 31°
 D. $31^\circ 18'$ E. 59°

29. The sides of a triangle are $(x + 4)$ cm, x cm and $(x - 4)$ cm respectively. If the cosine of the largest angle is $1/5$, find the value of x

- A. 24cm B. 20cm C. 28cm
 D. $88/7$ cm E. 0cm

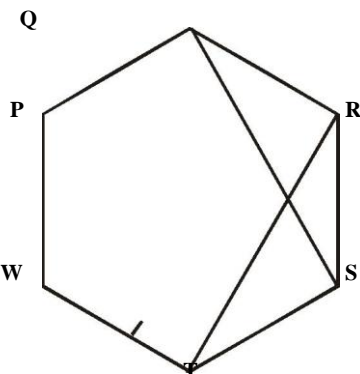
30. If $a = \frac{2x}{1-x}$ and $b = \frac{1+x}{1-x}$ then $a^2 - b^2$ in the simplest form is

($x+1$)

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

V

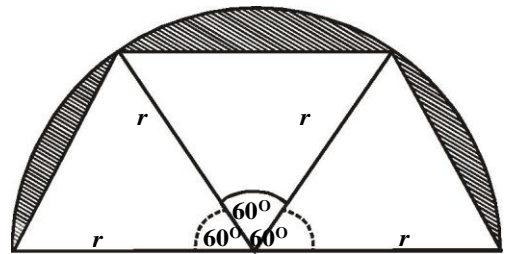
32.



- A.
 D.

- In the figure above PQRSTW is a regular hexagon. QS intersects RT at V. calculate $\angle TVS$.
 A. 60° B. 90° C. 120°

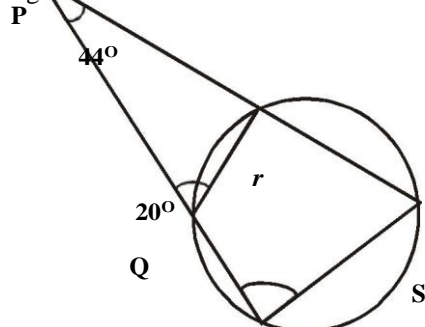
34



Find the area of the shaded portion of the semi-circular

- A. $r^2/4(4p - 3\sqrt{3})$ B. $r^2/4(2p + 3\sqrt{3})$
 C. $1/2r^2p$ D. $1/8r\sqrt{3}$
 E. $r^2/8(4p + 3\sqrt{3})$

figure above.



35

In the figure above QRS is a line, $\angle PSQ = 35^\circ$ $\angle SPR = 30^\circ$ and O is the centre of the circle find $\angle OQP$

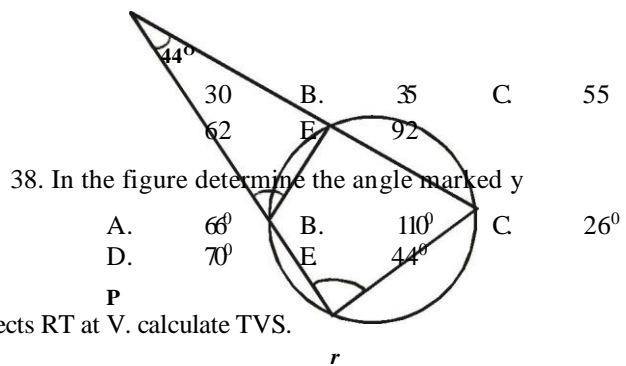
- A. 35° B. 30° C. 130°
 A. $3x+1/(x-1)$ B. $3x^2-1/(x-1)^2$
 C. $3x^2+1/(1-x)^2$ D. $5x^2-1/(1-x)^2$
 C. $1/q + 1$ E. $5x^2 - 2x - 1/(1-x)^2$
 E. $1/1-q$ ($\frac{x-1}{x}$)

31. Simplify $(1 + \frac{1}{q})(x+2)$
 D. $1 + q$

Scores(n)	Frequency(f)
3	30
4	32
5	30
6	35
7	20

- $x^2(x+2)/x+1$
 $2x(x+2)$
 E. $2x(x+2)/x+1$

37. The cumulative frequency function



38. In the figure determine the angle marked y

- A. 60° B. 110° C. 26°
 D. 70° E. 44°

P

r

D. 30° E. 80° 20°

33. Find the integral values of x which satisfy the inequalities $3 < 2.5x < 12$

- A. $-2, -1$ B. $2, 2$ C. $-1, 0$
D. $0, 1$ E. $1, 2$

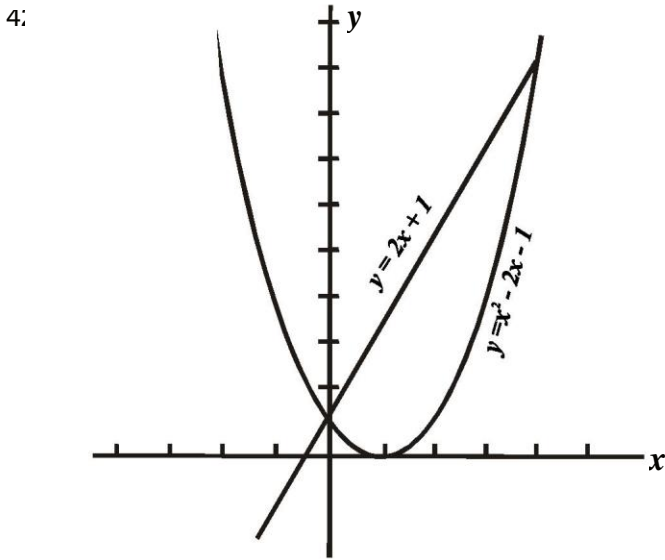
Q S

y
R

39. A right circular cone has a base radius r cm and a vertical height $2y^0$. the height of the cone is
- A. $r \tan y^0$ cm B. $r \sin y^0$ cm
 C. $r \cot y^0$ cm D. $r \cos y^0$ cm
 E. $r \operatorname{cosec} y^0$ cm

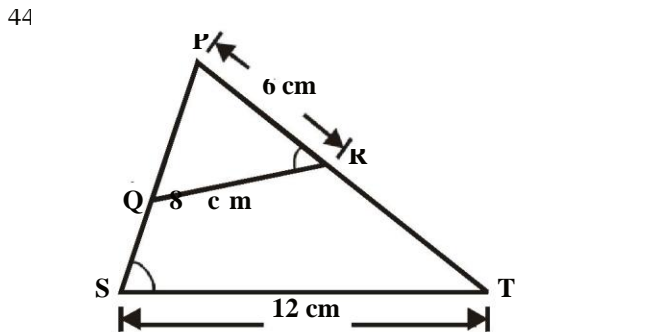
40. Two fair dice are rolled. What is the probability that both show up the same number of point?
- A. $1/36$ B. $7/36$ C. $1/2$
 D. $1/3$ E. $1/6$

41. The larger value of y for which $(y - 1)^2 = 4y - 7$ is
- A. 2 B. 4 C. 6
 D. 7 E. 8



Find the x coordinates of the points of intersection of the two equations in the graph above.

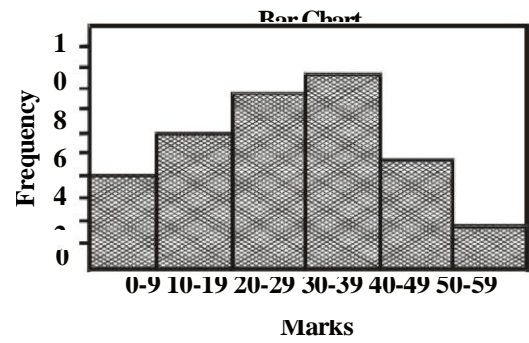
- A. 1,1 B. 0,4 C. 4,9
 D. 0,0 E. 0,4
43. If $\sin q = x/y$ and $0^0 < q < 90^0$ then find $1/\tan q$
- A. $x/\sqrt{(y^2 - x^2)}$ B. x/y
 C. $\frac{1}{\sqrt{y^2 - x^2}}$
 D. $(\sqrt{y^2 - x^2})/(\sqrt{y^2 - x^2})$
 E. $\frac{\sqrt{y^2 - x^2}}{y}$



In the figure above $TSP = PRQ$, $QR = 8$ cm. $PR = 6$ cm and $ST = 12$ cm. Find the length SP

A. 4cm B. 16cm C. 9cm
 D. 14cm E. Impossible insufficient data

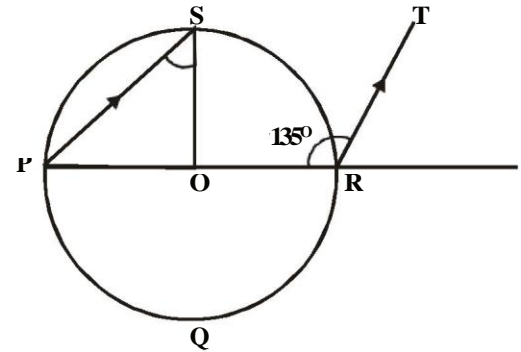
45



The bar chart above shows the mark distribution in a class test. Find the number of students in the class.

A. 9 B. 2 C. 60
 D. 30 E. 34

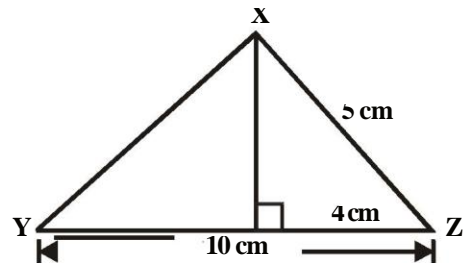
46.



In the figure above, O is the centre of circle $PQRS$ and $PS \parallel RT$. If $\angle PRT = 135^0$, then $\angle PSQ$ is

A. $67\frac{1}{2}^0$ B. 45^0 C. 90^0
 D. $33\frac{3}{4}^0$ E. $22\frac{1}{2}^0$

47. XYZ is a triangle and XW is perpendicular to YZ at W . if $XZ = 5$ cm and $WZ = 4$ cm, calculate XY .
- A. $5\sqrt{3}$ cm B. $3\sqrt{5}$ cm C. $3\sqrt{3}$ cm
 D. 5cm E. 6cm



48. Measurements of the diameters in centimeters of 20 copper spheres are distributed as shown below

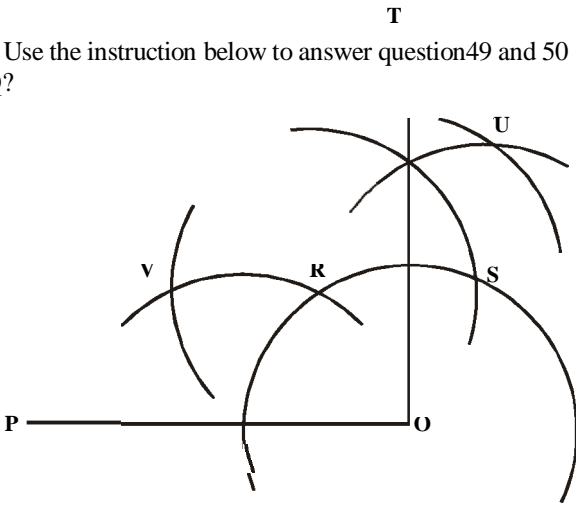
Class boundary in cm	frequency
3.35-3.45	3
3.45-3.55	6
3.55-3.65	7
3.65-3.75	4

What is the mean diameter of the copper sphere?

A. 3.40cm B. 3.58cm C. 3.56cm
 D. 3.62cm E. 3.63cm

Use the instruction below to answer question 49 and 50 joined to Q?

- A.
D.



49 What is the obtuse angle formed when the point U is

- A. 75° B. 154° C. 120°
D. 105° E. 125°

50 What is the acute angle formed when the point V joined to Q?

- A. 60° B. 30° C. 45°
D. 90° E. 15°

Mathematics 1985

1 Arrange the following numbers in ascending order of magnitude $6/7, 13/15, 0.865$

- A. $6/7 < 0.865 < 13/15$
B. $6/7 < 13/15 < 0.865$
C. $13/15 < 6/7 < 0.865$
D. $13/15 < 0.865 < 6/7$
E. $0.865 < 6/7 < 13/15$

2 A sum of money was invested at 8% per annum simple interest. If after 4 years the money amounts to #330.00, find the amount originally invested.

- A. #180.00 B. #165.00 C. #150.00
D. #200.00 E. #250.00

3 In the equation below, solve for x if all the numbers are in base 2? $11/x = 1000/(x+101)$

- A. 101 B. 11 C. 110
D. 111 E. 10

4 List all integers satisfying the inequality

$$-2 < 2x - 6 < 4$$

- A. 2,3,4,5 B. 2,3,4 C. 25
D. 3,4,5 E. 4,5

5 Find correct to two decimal places

- $100 + 1/100 + 3/1000 + 27/10000$
A. 100.02 B. 1000.02
C. 100.22 D. 100.01
E. 100.51

6 Simplify $1/2 + 1/1$

$$2 + \frac{\text{-----}}{1}$$

7. If three numbers p, q, r are in the ratio 6:4:5 find the value of $(3q - q)/(4q + r)$

- A. $3/2$ B. $2/3$ C. 2
D. 3 E. 18

8. Without using tables, evaluate $\log_2 4 + \log_4 2 - \log_{25} 5$

- A. $1/2$ B. $1/5$ C. 0
D. 5 E. 2

9. John gives one third of his money to Janet who has #105.00. He then finds that his money is reduced to one-fourth of what Janet now has. Find how much money John had at first.

- A. #45.00 B. #48.00 C. #52.00
D. #58.00 E. #60.00

10. Find x if $\log_9 x = 1.5$

- A. 720 B. 270 C. 36.0
D. 35 E. 24.5

11 Write h in terms of a $\frac{b(1 - ch)}{1 - dh}$

- A. $h = \frac{a - b}{ad - bc}$ B. $h = \frac{a + b}{ad - bc}$

- C. $h = \frac{ad - bc}{a - b}$ D. $h = \frac{1 - b}{d - bc}$

- E. $h = \frac{b - a}{ad - bc}$

12.

$22\frac{1}{2}\%$ of the Nigerian Naira is equal to $17\frac{1}{10}\%$ of a foreign currency M. what is the conversion rate of the M to the Naira?

- A. $1M = 15/57 N$ B. $1M = 2\frac{11}{57} N$
C. $1M = 18/57 N$ D. $1M = 38\frac{1}{4} N$

E. $1M = 38\frac{3}{4} N$
Find the values of p for which the equation $x^2 + 2p + 1 = 0$ has equal roots

- A. (0,12) B. (1,2) C. (2,10)
D. (4,5) E. (3,4)

2 ---

- A. $4 + 1/5$
D. $3/4$ B. $1/3$ C. $169/190$
E. $1^{21/}$ 13.

14. If $e^x = 1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + \dots$ find $e^{1/2}$
- A. $1 - x + \frac{x^2}{2!} - \frac{x^3}{3!} + \dots$ B. $1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + \dots$ C. $1 + \frac{x}{2} + \frac{x^2}{4} - \frac{x^3}{8} + \dots$ D. $1 - \frac{x}{2} + \frac{x^2}{4} - \frac{x^3}{8} + \dots$ E. $1 + \frac{x}{2} + \frac{x^2}{4} + \frac{x^3}{8} + \dots$
5. $(4|3 + 4|2) (4|3 - 4|2) (3| + \sim 2)$ is equal to
- A. 0 B. $4\sqrt{3} + 4\sqrt{2}$ C. $(4|2 - 4|3) (|3 + |2)$ D. $\sim 3 + \sim 2$ E. 1
16. In a restaurant, the cost of providing a particular type of food is partly constant and partly inversely proportional to the number of people. If the cost per head for 100 people is 30k and the cost for 40 people is 60k, find the cost for 50 people
- A. 15k B. 45k C. 20k D. 50k E. 40k
17. The factors of $9 - (x^2 - 3x - 1)^2$ are
- A. $-(x - 4)(x + 1)(x - 1)(x - 2)$
 B. $(x - 4)(x - 1)(x - 1)(x + 2)$
 C. $-(x - 2)(x + 1)(x + 2)(x + 4)$
 D. $(x - 4)(x - 3)(x - 2)(x + 1)$
 E. $(x - 2)(x + 2)(x - 1)(x + 1)$
18. If $3^{2y} \cdot 6(3y) = 27$ find y
- A. 3 B. 1 C. 2 D. 3 E. 1
19. Factorize $abx^2 + 8y - 4bx - 2axy$
- A. $(ax - 4)(bx - 2y)$ B. $(ax + b)(x - 8y)$
 C. $(ax - 2y)(by - 4)$ D. $(abx - 4)(x - 2y)$
 E. $(bx - 4)(ax - 2y)$
20. At what real value of x do the curves whose equations are $y = x^3 + x$ and $y = x^2 + 1$ intersect?
- A. -2 B. 2 C. 1 D. 0 E. 1
21. If the quadrilateral function $3x^2 - 7x + R$ is a perfect square find R
- A. $49/24$ B. $49/3$ C. $49/6$ D. $49/12$ E. $49/36$
22. Solve the following equation $2/(2r - 1) - 5/3 = 1/(r + 2)$
- A. $(-1, 5/2)$ B. $(-1, -5/2)$
 C. $(5/2, 1)$ D. $(2, 1)$
 E. $(1, 2)$
23. Solve for (x,y) in the equations $2x + y = 4; x^2 + xy = -12$
- A. $(6, -8); (-2, 8)$ B. $(3, -4); (-1, 4)$
 C. $(8, -4); (-1, 4)$ D. $(-8, 6); (8, -2)$
 E. $(-4, 3); (4, -1)$
24. Solve the simultaneous equations $2x - 3y + 10 = 10x - 6y = 5$
- A. $x = 2^{1/4}, y = 3^{1/5}$ B. $x = 3^{1/2}, y = 2^{1/5}$

25. If $f(x-2) = 4x^2 + x + 7$ find $f(1)$
 A. 12 B. 27 C. 7
 D. 46 E. 17

26. In $\triangle XYZ$, $XY = 13\text{cm}$, $YZ = 9\text{cm}$, $XZ = 11\text{cm}$ and $\angle XYZ = q^\circ$. find $\cos q$
 A. $4/39$
 B. $43/39$
 C. $209/286$
 D. $1/6$
 E. $43/78$

x	-2	-1	0	1	2	3
$y = x^{20} - x + 3$		3	3	3	9	27

27. Find the missing value in the table below
 A. -32 B. 14 C. 40
 D. 22 E. 37

28. Find the number of goals scored by a football team in 20 matches is shown below

No. of goals	0	1	2	3	4	5
No. of matches	3	5	7	4	1	0

What are the values of the mean and the mode respectively?

- A. (1.75, 5) B. (1.75, 2)
 C. (1.75, 1) D. (2, 2)
 E. (2, 1)
29. If the hypotenuse of a right angle isosceles triangle is 2, what is the length of each of the other sides?
 A. $\sqrt{2}$ B. $1/\sqrt{2}$ C. $2\sqrt{2}$
 D. 1 E. -1

30. If two fair coins are tossed, what is the probability of getting at least one head?
 A. $1/4$ B. $1/2$ C. 1
 D. $2/3$ E. $3/4$

31. The ratio of the length of two similar rectangular blocks is 2:3, if the volume of the larger block is 351cm^3 , then the volume of the other block is
 A. 234.00cm^3 B. 526.50cm^3
 C. 166.00cm^3 D. 729.75cm^3
 E. 104.00cm^3

32. The bearing of bird on a tree from a hunter on the ground is $N72^\circ E$. what is the bearing of the hunter from the bird?
 A. $S18^\circ W$ B. $S72^\circ W$
 C. $S72^\circ E$ D. $S27^\circ E$
 E. $S27^\circ W$