SEE NEW MODEL QUESTION 2074
ISSUED BY CDC (SET 1)

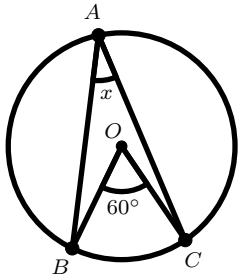
Subject: Mahtematics **F.M.:** 100
Time: 3 hours **P.M.:** 40

Group "A" [6 × 1 = 6]

1. (a) Write the formula for finding rate of discount when discounted amount and marked price are given.
   (b) What is the area of equilateral triangle whose side is a unit?
2. (a) Find out the value of x if $\sqrt{x} = 9$.
   (b) In the following data in which series does median lie? Write it.

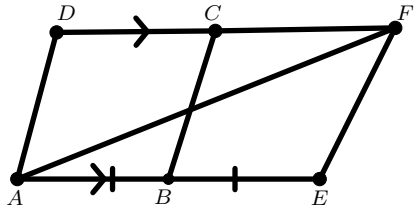
x	20 - 30	30 - 40	40 - 50	50 - 60	60 - 70
c.f.	16	36	61	77	80

3. (a) What is the relation between area of parallelogram and triangle standing on same base and between the same parallels? Write it.
   (b) In the given figure, O is the centre of the circle. What is the value of x?

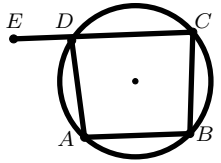


Group "B" [17 × 2 = 34]

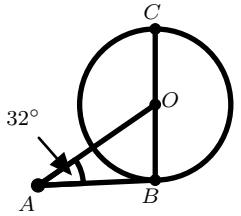
4. (a) How much more is Rs. 3060 than the value including 13% VAT in Rs. 2700?
   (b) A farmer bought a tractor for Rs 400000 and sold it after 2 years at 10% depreciation rate per year. What is the cost of tractor after 2 years? Find.
5. (a) The capacity of a closed cylindrical pot of height 1 m. is 1500 liters. How many square metres of metal sheet would be needed to make its base?
   (b) 27 solid iron spheres, each of radius x cm are melted to form a sphere with radius y cm , find the ratio $x : y$.
   (c) A conical tent has 10 m slant height and the radius of its base is 7 m. What is the cost of cloth required to make the tent at the rate of Rs. 300 per square meters?
6. (a) Find the HCF of : $(x^3 - xy^2), (x - y)$
   (b) Simplify: $\sqrt{125} - \sqrt{45} + \sqrt{5}$
7. (a) Simplify: $\dfrac{14^6 \times 15^5}{35^6 \times 6^5}$
   (b) Find the LCM of: $p^2 + 2pq + q^2, pq^2 + p^2q$
   (c) The sum of two numbers is 128 and their difference is 16. Find the numbers.
8. (a) In the given figure, AE ∥ DF and B is midpoint of AE. If area of ΔAEF is 20 square centimeters, what is the area of parallelogram ABCD? Find.



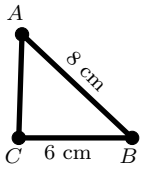
   (b) In the given figure, ABCD is a cyclic quadrilateral. If ∠ADE = 75° then find the value of ∠ADC and ∠ABC.



   (c) In the given circle, AB is a tangent, BC is diameter and ∠BAO = 32°. Find the value of ∠AOB.



9. (a) In the given figure, AB = 8 cm, BC = 6 cm, and the area of ΔABC is 12 cm². Find the the value of ∠ABC.



(b) In a continuous series, mean value = 25, sum of frequency $(N) = 55 + a$ and sum of product of frequency and mid-value $(\Sigma fm) = 1345 + 26a$. Find the value of a.

10. (a) A cubical dice is thrown two times, find the probability that the outcomes is 5 in first throw and odd number in second throw.

(b) Three red and two white balls of the same size and kept in a box. Two drowns are made one after the other (without replacement). Show the probability of getting red and white balls in the tree diagram.

. **Group "C"** $[10 \times 4 = 40\ ]$

11. In a group of 150 people, 120 like to play volleyball, 85 football and 25 like to play none of the game.

i Show the above information in a Venn-diagram.

ii How many people like to play both games?

iii How many people like to play volleyball only?

12. After allowing 20% discount and then levying 13% Value Added Tax (VAT), the value of the watch will be Rs. 904. Find the marked price of the watch.

13. An umbrella is made by stitching 10 triangular pieces of cloth of two different colours, each piece measuring 15 cm, 41 cm and 28 cm. How much cloth is required for the umbrella? If the cost of 1 cm^2 is Rs. 0.50, find the total cost of cloth.

14. Simplify: $\dfrac{1}{a^2-3a+2} + \dfrac{1}{a^2-5a+6} + \dfrac{2}{a^2-8a+15}$

15. A rectangular field is 16 m. long and 10 m. wide. There is a path of uniform width all around it having an area of 120 m^2. Find the width of the path.

16. Prove that the area of parallelogram PQRS and PQMN standing on same base and the same parallels are equal in area.

17. Construct a triangle ADE equal in area to the quadrilateral ABCD in which AB = BC = 5.5 cm, CD = DA = 4.5 cm and $\angle A = 60°$.

18. Verify experimentally that angle AKB at the centre is twice the inscribed angle ACB subtended by the same arc AB. (Two figures with at least 3 cm radii are necessary.)

19. At the centre of a circular pond, there is a pole of 11.62 m high above the surface of water. From a point on the edge of a pond, a man of 1.62 m high observed the angle of elevation of the top of the pole and found to be 60°. Find the diameter of the pond.

20. The following are the marks obtained by students in mathematics in an examination.
15, 12, 23, 35, 46, 57, 18, 12, 39, 51, 32, 43, 25, 59, 18, 38, 45, 40, 32, 33
(i) Make a frequency table of class interval 10.
(ii) Find the third quartile.

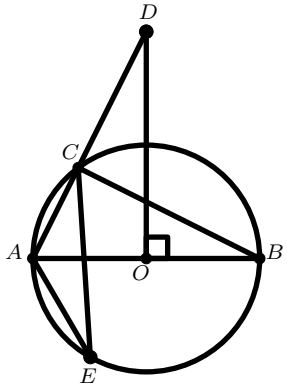
. **Group "D"** $[4 \times 5 = 20\ ]$

21. By what percent more is the yearly compound interest on Rs. 2000 for 3 years at 10% p.a. than simple interest on Rs. 3000 for 2 years at 8% p.a.? Find it.

22. In a marriage ceremony of Pemba's daughter, he has to make arrangement for accommodation of 150 persons. For this purpose he plans to build a conical tent in such a way that each person has 4 sq.m. of the space on ground and 20 cu.m. of air to breadth. What should be the height of the tent? Find it.

23. If $a + b + c = 0$, prove that:
$$\frac{1}{1+x^a+x^{-b}} + \frac{1}{1+x^b+x^{-c}} + \frac{1}{1+x^c+x^{-a}} = 1$$

24. In the given figure, O is the centre of the circle. AB is the diameter and DO $\perp$ AB. Prove that $\angle$AEC = $\angle$ODA.



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