MATHS

BOOKS - AGRAWAL PUBLICATION

SAMPEL PAPER 13

Exercise

1. Explain how the product of two consecutive positive integers is an even integer.

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2. Make a factor tree for the composite number 324.

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3. Find the coordinates of the points that trisect the line segment joining (1, - 2) and (-3, 4)

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4. Find the ratio in which x-axis divides the join of (2,-3) and (5,6)

5. In a $\triangle ABC$, $BD \perp CA$ and $CE \perp BA$. Prove that $\triangle ABD - \triangle ACE$.

6. Construct a line segment of length 8 cm. Divide it internally in the ratio 2:5.

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7. If $\cos ecA = \dfrac{13}{12}$ then find the value of $\dfrac{2\sin A - 3\cos A}{4\sin A - 9\cos A}$

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8. If the angle of elevation of the top of a tower from a point distant 100m from its base is $45°$, then find the height of the tower.

9. If the 6th term and the 11th term of an A.P. are 12 and 22 respectively, then find its 2nd term?

10. Solve for x and y: 3x-2y = 4

6x-4 = 8

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11. How many tangents can be drawn to a circle from a point lying inside the circle?

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12. Find the degree of the polynomial:

$(x + 1)(x^2 - x + x^4 - 1).$

13. If r = 3 is a root of quadratic equation

$kr^2 - kr - 3 = 0$, then find the value of k.

14. For a rhombus ABCD, prove that $4AB^2 = AC^2 + BD^2$.

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15. Two different dice are thrown together. Find that the probability of getting the sum of the two numbers less than 7.

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16. A bag contains 5 red, 8 green and 7 white balls. One ball is drawn at random from the bag. Find the probability of getting a red or white ball.

17. Draw a factor tree for the number 546.

18. The angles of a triangle are in A.P. the least being half the greatest. Find the angles.

19. What number should be added to the polynomial $x^2 - 5x + 4$ so that 3 is the zero of the polynomial?

20. Evaluate :

$$3\cos^{260}{}^{\wedge} \circ \sec^2 30° - 2\sin^2 30^2 \tan^2 60^2$$

21. A heap of rice is in the form of a cone of base diameter 24 m and height 3.5 m. How much convas cloth is required to just cover the heap.

22. Knowing that $\sqrt{5}$ is an irrational number, show that $3 + 2\sqrt{5}$ is an irrational number.

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23. Using elimination method, solve for x and y the following pair of equations: 7x-4y= 49, 5x-6y = 57
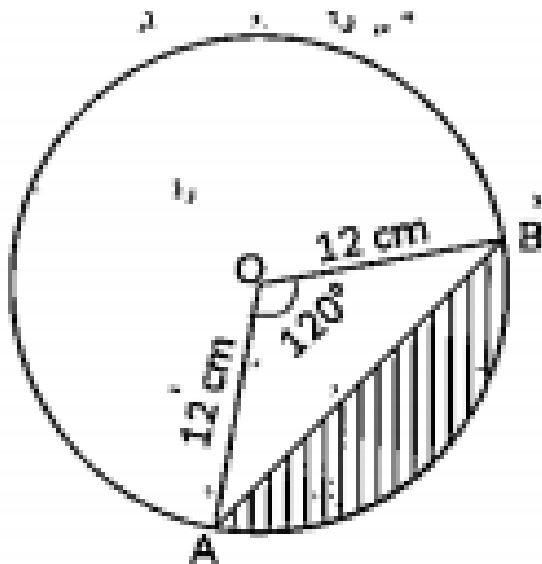
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24. A circular pond is of diameter 17.5m. It is surrounded by a 2m wide path. Find the cost of constructing the path at the rate of 225 per sq m.

25. A chord of a circle of radius 12 cm subtends an angle of $120°$ at the centre. Find the area of the corresponding segment of the cirle (Use

$\pi = 3.14$ and `sqrt3= 1.73)

26. Let s denote the semi-perimeter of a triangle ABC in which BC = a , CA = b, AB = c. If a

circle touched the side BC, CA,AB at D,E,F respectively. Prove that BD = s-b

27. All the blakc face cards are removed from a pack of 52 playing cards. The remaining cards are well shuffled and then a card is drawn at randam. Find the probability of getting a:

face card

28. All the blakc face cards are removed from a pack of 52 playing cards. The remaining cards are well shuffled and then a card is drawn at randam. Find the probability of getting a:

red card

29. All the blakc face cards are removed from a pack of 52 playing cards. The remaining cards are well shuffled and then a card is drawn at

randam. Find the probability of getting a:

black card

30. All the blakc face cards are removed from a pack of 52 playing cards. The remaining cards are well shuffled and then a card is drawn at randam. Find the probability of getting a:

king.

31. The distribution below gives the makes of 100 students of a class. If the median makes are 24, find the frequrencies f1 and f2

Makes	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40
No. of Students	4	6	10	f_1	25	f_2	18	5

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32. A man sold a chair and a table for Rs 1520, thereby making a profit of 25% on the chair and 10% on the table. By selling together for Rs 1535, he would have made a profit to 10%

on the chair and 25% on the table. Find the cost price of each.

33. If Zeba was younger bny 5 years then what she really is, then the square of her are (in years) would have been 11 more than five times her actua age. What is her age now?

34. If $\sin\theta + \cos\theta = \sqrt{3}$, then prove that $\tan\theta + \cot\theta = 1$.