MATHS

BOOKS - AGRAWAL PUBLICATION

Sample paper 12

Exercise

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1. If two concentric circles are of radii 5 cm and 3 cm, then the length of the chord of the larger circle which touches the smaller circle

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यदि दो संकंद्री वृत्तों की त्रिज्याएं 5 सेमी तथा 3 सेमी. हों, तो उनमें बड़े वृत्त की उस जीवा की लम्बाई कितनी होगी, जो छोटे वृत्त को स्पर्श करती है?

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2. If P is the point $(-\cos\theta, \sin\theta)$, find the length of OP, where O is the origin.

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3. Find the smallest 4-digit number, which can be divided exactly by 24 and 36.

4. ABC is an isoscles triangle, right-angled at C. Show that $AB^2 = 2AC^2$.

5. State the SAS cirterion of similarity of triangles.

6. If a metalic cube edge 1 cm is drawn into a wire of diameter 3.2 mm, then find the length of the wire.

7. If a cuibcal block of side 7 cm is surmounted by a hemisphere, then find the gretest diameter that a hemisphere can have.

8. If the nth term of an A.P. is $\dfrac{3+n}{4}$, then find the common difference of A.P.

9. If 3 sec A - 2 cos B = $\sqrt{3}$ and $B = 30°$, then find the value of A.
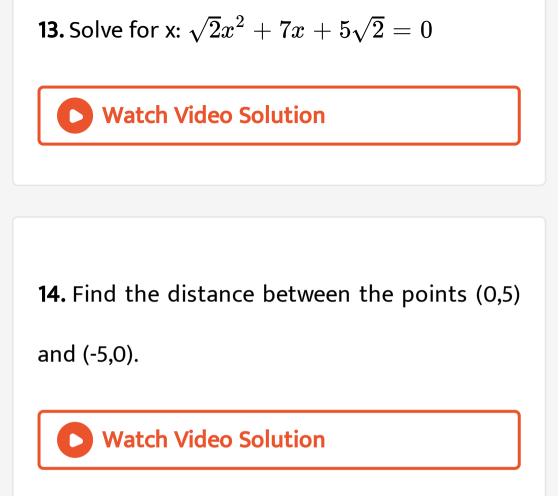
10. If $\sin\theta + \sin^2\theta = 1$, then the value of $\cos^2\theta + \cos^4\theta$ is equal to:

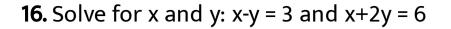यदि $\sin\theta + \sin^2\theta = 1$तो $\cos^2\theta + \cos^4\theta$ का मान किसके बराबर है?

11. The perimeter of a rectangle is 82 m and its area is 400 m^2. What is the breadth of the rectangle ?
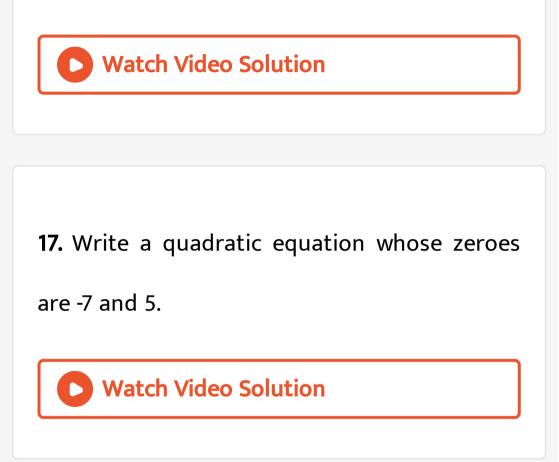
12. What is the value of k for which the system of equations $x + 2y - 3 = 0$ and $5x + ky + 7 = 0$ has no solution ?

13. Solve for x: $\sqrt{2}x^2 + 7x + 5\sqrt{2} = 0$

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14. Find the distance between the points (0,5) and (-5,0).

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15. Which term of the A.P. 21,42,63, 84,....is 210?

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16. Solve for x and y: x-y = 3 and x+2y = 6

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17. Write a quadratic equation whose zeroes are -7 and 5.

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18. If $\sin\theta = \dfrac{12}{13}$, find the value of :

$$\dfrac{\sin^2\theta - \cos^2\theta}{2\sin\theta\cos t\theta} - \dfrac{1}{\tan^2\theta}$$

19. Find the area and perimeter of a sheet of a paper which is a sector of a circle of radius 21 cm central angle $45°$.

20. If the perimeter of a circle and a square are equal, then what is the ratio of the area of the circle to that of the square ?

21. The two opposite verticles of a square (-1,2) and (3,2) . Find the coordinates of the other two vertices.

22. Find a relationship between x and y such that the point (x,y) is equidistant from the points (2,5) and (-1,4).

23. Find the greatest number which when divides 245 and 1029 leaves remainder 5 in each case.

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24. Solve for x: $x^4 - 20x^2 + 64 = 0$.

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25. Solve for x and y : = $\dfrac{3a}{x} - \dfrac{2b}{y} = -5$ and $\dfrac{a}{x} + \dfrac{3b}{y} = 2, x, y \neq 0.$

26. Prove that the area of an equilateral triangle descriped on a side of a right-angles isosceles triangle is half the area of the equilateral triangle, described on the hypotenuse.

27. If α and β are zeros of a quadratic polynomial $4x^2 + 4x + 1$, then find the quadratic polynomial whose zeros are $\alpha^2 + \beta^2$ and $2\alpha\beta$.

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28. A farmer conects a pipe of internal diameter 20 cm from a canal into cylindrical tank which is 0 m in diameter and 2 m deep. If the water flows through the pipe at the rate of

3 km hour, in how much time will the tank be filled completely?

29. How many terms of the A.P. 9,17,25,..... Must be taken to give a sum of 636?

30. 5 books and 7 pens together cost Rs 79, whereas 7 books and 5 pens together cost

Rs77. Find the toal cost of 1 book and 2 pens.

31. The length of a rectangular plot is greater than thrice its breadth by 2m. If the area of the plot is $120m^2$. Find the dimensions of the plot.

32. A tower is 50, high. Its shadow is x metres shorter, when the sun's altitude is $45°$ than when it is $30°$. Find x correct to the nearest cm.

33. A dice is thrown twice. What is the probability that 2 will not come up either time?

34. 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 neither a green ball nor a red ball.

35. Find th curved surface area of a right circular cone of height 15 cm and base diameter 16 cm.

36. The outer and inner diameters of a circular ring are 34 cm and 32 cm respectively. Find the area of the ring.

37. If $2 \sin 2\theta = \sqrt{3}, then f \in d the vakue of \theta.$

38. If $\sin A = \dfrac{1}{2}$, $\cos B = 1, 0 < A, B \leq \dfrac{\pi}{2}$,

then find the value of cot(A+B).

39. Calculate the perimeter of a triangle XOY

with vertices X(3,4), O(0,0) and Y(6,0).

40. If r =3 is a root of quadratic equation $kr^2 - kr - 3 = 0$ then find the value of k.

41. Find the degree of the polynomial `(x+1) (x^2-x+x^4 -1).

42. Can two numbers have 18 as their LCM?

Give reason to explain your answer.

43. Write the exponent of 3 in the prime

factorisation of 1944.

44. Find the value of k for which the equation

kx(x-2) +6 =0 has equal roots.

45. Solve the quadratic equation for x: `(2x-3)^2=25.

46. Find the value of k for which the pair linear equations kx= 3y= k-2, 12x + ky= k has no solution.

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47. How many multiples of 4 lie between 10 nd 205?

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48. Find the zeros of the polynomial `x^2- 3x - m(m+3).

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