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STD X WORKSHEET (2017-18)- MATHEMATICS- PERIODICAL TEST - I

REAL NUMBERS

1. The LCM of two numbers is 2079 and their HCF is 27. If one of the number is 297, find the other number.
2. If LCM (12, 28) = 84, find HCF (12,28).
3. Why 5 x 7 x 11 + 7 is s composite number?
4. Using Euclid's division algorithm, find HCF of 15 and 575.
5. Use Euclid's Division lemma to show that the cube of any positive integer is of the form 9 mor 9m +1 or 9m+8.
6. The LCM of two numbers is 14 times their HCF. The sum of LCM and HCF is 600. If one number is 280, then find the other number.
7. Prove that (3+5$\sqrt{2}$) is an irrational number.
8. Check whether 4^n can end with the digit O for any natural number n.
9. Without actually performing long division state whether the following number has a terminating decimal expansion or non-terminating recurring decimal expansion $\frac{543}{225}$
10. Prove that $\sqrt{7}$ is an irrational number.

POLYNOMIALS

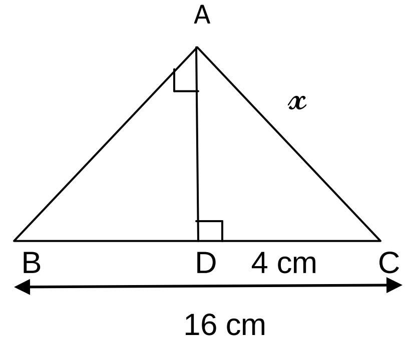
11. Write the polynomial whose zeroes are $\frac{2}{3}$ and $\frac{-1}{3}$
12. If $\propto$ and β are the zeroes of the polynomial x^2-5x+k such that $\propto - \beta$=1, find the value of k.
13. If $\propto, \beta$ are zeroes of the polynomial x^2-4x+3, then form a quadratic polynomial whose zeroes are 3$\propto$ and 3 β
14. Show that $\frac{1}{2}$ and $\frac{-3}{2}$ are the zeroes of the polynomial $4x^2$+4x −3 and verify the relationship between zeroes and coefficients of polynomials.
15. Divide 6+19x+$x^2 - 6x^3$ by 2+5x-3x^2 and verify the result by division algorithm.
16. If $\propto$,β are the two zeroes of the polynomial 25p^2-15p+2, find a quadratic polynomial whose zeroes are $\frac{1}{2\propto}$ and $\frac{1}{2\beta}$.
17. What must be added to the polynomial p(x)=$5x^4$+$6x^3$-13x^2-44x+7 so that the resulting polynomial is exactly divisible by the polynomial Q(x)= x^2+$4\ x + 3$ and the degree of the polynomial to be a added must be less than degree of the polynomial Q(x)?
18. On dividing the polynomial 3$x^3 + 4x^2 + 5x - 13$ by a polynomial g(x), the quotient and the remainder were (3 $x + 10$), and 16 $x - 43$), respectively. Find g(x).

19. If the polynomial $x^4+2x^3+8x^2+12x+18$ is divided by another polynomial x^2+5, the remainder comes out to be p$x+q$. Find the values of p and q.

20. Obtain all other zeroes of the polynomial $x^4-2x^3+26x^2+54x-27$, if two of its zeroes are $3\sqrt{3}$ and $-3\sqrt{3}$.

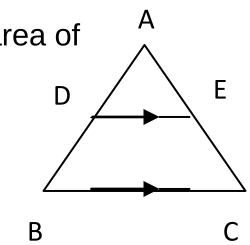
TRIANGLES

21. In the given figure, find the value of x.

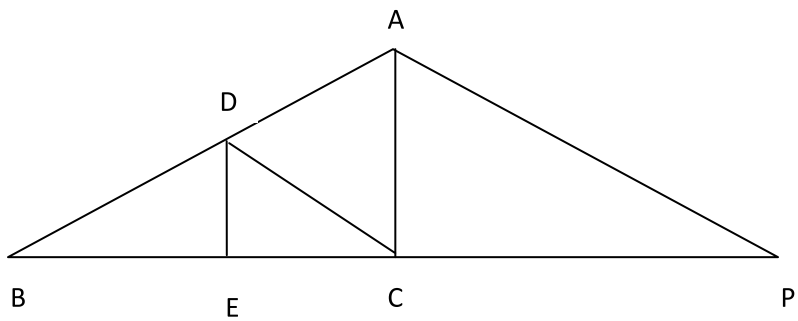


22. Δ DEF ~ Δ ABC. If DE: AB=2:3 and ar (Δ DEF) is 44 sq. units, then find the area of (Δ ABC).

23. In Δ ABC, AB=6cm and DE II BC such that AE= $\frac{1}{4}$ AC, then find the length of AD.

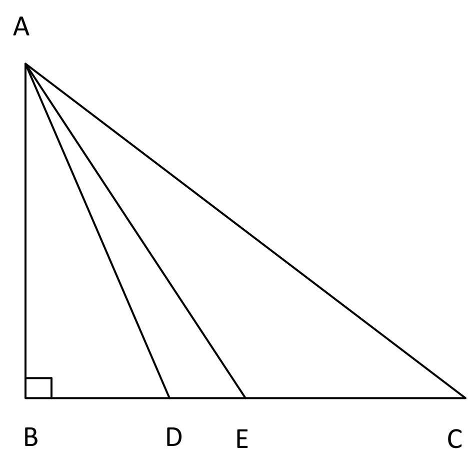


24. In the figure, DEII AC and $\frac{BE}{EC}=\frac{BC}{CP}$. Prove that DCII AP



25. Two hoardings on save energy are put on two poles of heights 10m and 15m standing opposite to each other on a plane ground. If the distance between the feet of pole is $5\sqrt{3m}$, find the distance between their tops.

26. In the given figure, D and E trisect BC. Prove that $8AE^2 = 3AC^2 + 5AD^2$



27. Prove that the sum of the squares of the sides of a rhombus is equal to the sum of the squares of its diagonals.
28. D,E and F are the midpoints of sides AB, BC and CA respectively. Find the ratio of the areas of ΔDEF and Δ ABC
29. The perpendicular from A on side BC of a Δ ABC interests BC at D, such that DB =3CD. Prove that $2AB^2 = 2AC^2 + BC^2$.
30. ABC is a right triangle, right-angled at C. If P is the length of the perpendicular from C to AB and a, b, c have the usual meaning, then prove that $\frac{1}{p^2}=\frac{1}{a^2}+\frac{1}{b^2}$.

INTRODUCTION TO TRIGONOMETRY

31. Find the value of $\frac{2sin38^0}{cos52}$
32. Find the value of 2 tan 23^0 tan 35^0 tan 30^0 tan55^0 tan 67^0
33. If $\frac{3(cos^2 25^0+cos^2 65^0)}{(sin^2 27^0+sin^2 63^0)}=\frac{a}{3}$, then find the value of a
34. Find the value of $\frac{sin^2 63^0+sin^2 27^0}{cos^2 17^0+cos^2 73^0}$
35. If cot B=$\frac{3}{4}$ and A+B =90^0, then find the value of tan A
36. If in a right angledΔ ABC, tan B= $\frac{12}{5}$ than find sin B
37. If acosθ +bsinθ = 4 and a sinθ-bcosθ = 3, then find the value of a^2+b^2
38. If sin$\theta = \frac{1}{3}$, find the value of 2cot$^2\theta$+2.
39. If cot $\theta = \frac{7}{8}$, Evaluate:

    (a) $\frac{(1+sin\theta)(1-sin\theta)}{(1+cos\theta)(1-cos\theta)}$ (b) cot$^2\theta$
40. If sin θ=$\frac{4}{5}$, find the value of $\frac{4tan\theta-5\ cos\theta}{sec\theta+4cot\theta}$
41. Evaluate: a) sin60^0cos30^0+sin30^0cos60^0 (b) $\frac{cos45^0}{sec\ 30^0+cosec\ 30^0}$
42. Evaluate: $\frac{tan^2 60^0+4sin^2 45^0+3sec^2 30^0+5cos^2 90^0}{cosec30^0+sec60^0-cot^2 30^0}$
43. Evaluate: cot12^0cot38^0cot52^0cot60^0cot78^0
44. If tan A=Cot B, prove that A+B=90^0
45. Show that : 2(cos$^2 45^0$+tan$^2 60^0$)-6(sin$^2 45^0$-tan$^2 30^0$)=6

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