MATHS — REVISION WORKSHEET TERM I

REAL NUMBERS

1. Find the HCF of the smallest composite number and smallest prime number.
2. Show that the number 8^n can never end with the digit zero for any natural number n.
3. Explain whether 3x 12 x 101 + 4 is a prime number or composite number.
4. Find the smallest number by which 1200 should be multiplied so that square root of the product is a rational number.
5. Express 0.3178178…………in the form p/q.
6. Show that square of any positive integer is of the form 4m or 4m + 1, where m is any integer.
7. Find the HCF of the numbers given k, 2k, 3k, 4k and 5k where k is any positive integer.
8. Prove that $\sqrt{2}$ is an irrational number. Hence show that $3/\sqrt{2}$ is also an irrational number.
9. Prove that $\sqrt{3}$ is an irrational number.
10. Prove that $\sqrt{5}$ is an irrational number.
11. Show that any positive integer is of the form 6q + 1 , 6q +3 or 6q +5, where q is some integer.

12. Find the LCM and HCF of 18 and 48.
13. Using Euclid's Division Algorithm find the HCF of
    1. 408, 170
    2. 455, 75
    3. 56, 814
    4. 2825, 70625
14. Prove that $7 - 6\sqrt{5}$ is an irrational number.
15. Prove that $5 + 3\sqrt{2}$ is an irrational number.
16. The HCF of two numbers is145 and their LCM is 2175. If one number is 725, find the other number.
17. Find the largest number which divides 615 and 963 leaving reminder 6 in each case.
18. Find the largest number which divides 445 , 572 and 699 leaving reminders 4, 5 and 6 respectively.

WORK SHEET CLASS 10- MATHEMATICS- POLYNOMIALS TERM I

1 . Show that $x^2 - 3$ is a factor of $2x^4 + 3x^3 - 2x^3 - 9x - 12$.

2. Find other zeroes of the polynomial $p(x) = 2x^4 + 7x^3 - 19x^2 - 14x + 30$ if two of its zeroes are $\sqrt{2}$ and $-\sqrt{2}$

3. Find all the zeroes of $2x^4 - 9x^3 + 5x^2 + 3x - 1$, if two of its zeroes are $2 + \sqrt{3}$ and $2 - \sqrt{3}$

4. Find all the zeroes of polynomial $4x^4 - 20x^3 + 23x^2 + 5x - 6$ if two of its zeroes are 2 and 3

5. When a polynomial f(x) is divided by $x^2 - 5$ the quotient is $x^2 - 2x - 3$ and remainder is zero. Find the polynomial and all its zeroes .

6. If the polynomial $f(x) = x^4 - 6x^3 + 16x^2 - 25x + 10$, is divided by another polynomial $x^2 - 2x + k$ the remainder Comes out to be $x + a$, Find k and a

7. On dividing $x^4 - 2x^3 - 5x - 8$ by a polynomial g(x), the quotient and remainder were $x^2 + 5$ and $5x + 17$, respectively. Find g(x)

8. If the polynomial $6x^4 + 8x^3 - 5x^2 + ax + b$ is exactly divisible by the polynomial $2x^2 - 5$, then find the values of a and b

9. If $x^4 - 2x^3 + 6x^2 - 6x + k$ is completely divisible by $x^2 - 2x + 3$, then find the value of k

10. If the remainder on division of $x^3 + 2x^2 + kx + 3$ by $x - 3$ is 21, find the quotient and the value of k

11. What must be subtracted from $2x^4 - 11x^3 + 29x^2 - 40x + 29$, so that the resulting polynomial is exactly divisible By $x^2 - 3x + 4$

12. Find the polynomial, whose zeroes are $2 + \sqrt{3}$ and $2 - \sqrt{3}$

13.Form a quadratic polynomial, one of whose zero is $2 + \sqrt{5}$ and the sum of zeroes is 4

14. Find a quadratic polynomial whose sum and product of the zeroes are 21/8 and 5/16

15. Find the zeroes of the polynomial and verify the relationship between the zeroes and the coefficient

a) $4x^2 - 7$ b) $\sqrt{3}x^2 - 8x + 4\sqrt{3}$ c) $2x^2 - 3\sqrt{2}x - 18$

16. If zeroes α and β of a polynomial $x^2 - 7x + k$ are such that $\alpha - \beta = 1$, then find the value of k

17. If one root of the polynomial $5x^2 + 13x + k$ is reciprocal of the other, then find the value of k

18.. Find the sum and product of the zeroes of quadratic polynomial $x^2 - 3$

19. If α and β are the zeroes of the polynomial $f(x) = x^2 - 8x + k$ such that $\alpha^2 + \beta^2 = 40$, find k

20. If α, β are the zeroes of a polynomial, such that $\alpha + \beta = 6$ and $\alpha\beta = 4$, then writes the polynomial

21. If the product of zeroes of the polynomial $ax^2 - 6x - 6$ is 4, find the value of a

22.If α, β are the zeroes of quadratic polynomial 2x2 + 5x + k, find the value of k such that $(\alpha + \beta)^2 - \alpha\beta = 24$

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CLASS – X MATHS WORKSHEET 2017-2018

CHAPTER-3 PAIR OF LINEAR EQUATIONS IN TWO VARIABLES

1. The sum of two numbers is 8. If their sum is four times their difference, find the numbers.
2. The sum of digits of a two-digit number is 13. If the number is subtracted from the one obtained by interchanging the digits, the result is 45. What is the number?
3. The difference between two numbers is 26 and one number is three times the other. Find them.
4. The sum of digits of a two-digit number is 15. The number obtained by reversing the order of digits of the given number exceeds the given number by 9. Find the given number.
5. A two-digit number is 4 more than 6 times the sum of its digits. If 18 is subtracted from the number, the digits are reversed. Find the number.
6. The sum of a two-digit number and the number formed by reversing the order of digits is 66. If the two digit differs by 2, find the number. How many such numbers are there?
7. The sum of two numbers is 1000 and the difference between their squares is 256000. Find the numbers.
8. A number consists of two digits whose sum is 5. When the digits are reversed, the number becomes greater by 9. Find the number.
9. A fraction becomes 9/11 if 2 is added to both numerator and the denominator. If 3 is added to both numerator and denominator it becomes 5/6. Find the fraction.

10. A fraction becomes 1/3 if one is subtracted from both its numerator and denominator. If one is added to both the numerator and denominator, it becomes ½. find the fraction.

11. If we add one to the numerator and subtract one from the denominator, a fraction becomes 1. It also becomes ½ if we add one to a denominator. What is the fraction?

12. For which value of 'a' and 'b' will the following pair of linear equations has infinitely many solutions?

$x+2y=1$

$(a-b)x+(a+b)y=a+b-2$

13. Two straight paths are represented by the equations $x-3y=2$ and $-2x+6y=5$. Check whether the paths cross each other or not.

14. Write a pair of linear equations which has the unique solutions $x=-1$ and $y=3$. How many such pairs can you write?

15. Solve the following pairs of equations:

(i) $4x+6/y=15$ $\quad$ $6x-8/y=14$

(ii) $2xy/x+y=3/2$ $\quad$ $xy/2x-y=-3/10$

16. Find 'p' if the lines represented by these equations are parallel, $3x-y-5=0$ and $6x-2y-p=0$.

17. Find 'p' and 'q' if the pair of equations has infinitely many solutions $2x+3y=7$ and $2px+py=28-qy$.

18. By the graphical method, find whether the following pair of equations are consistent or not. If consistent, solve them.

(i) $3x+y+4=0$, $6x-2y+4=0$ (ii) $x+y=3$, $3x+3y=9$

19. Write an equation of a line passing through the point representing solution of the pair of linear equations x+y=2 and 2x-y=1, how many such lines can we find?

20. Draw the graph of the pair of equations 2x+y=4 and 2x-y=4. Write the vertices of the triangle formed by these lines and the Y axis, find the area of this triangle?

21. The age of the father is twice the sum of the ages of his two children. After 20 years, his age will be equal to the sum of the ages of his two children. Find the age of his father.

22. Two years ago, Salim was thrice as old as his daughter and six years later, he will be four years older than twice her age. How old are they now?

23. A train covered a certain distance at a uniform speed. If the train could have been 10 km/hr; faster, it would have taken 2 hrs less than the scheduled time. And, if the train were slower by 10 km/hr; it would have taken 3 hours more than then the scheduled time. Find the distance covered by this.

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CLASS X MATHS WORKSHEET (2017-18)

CHAPTER 8 INTRODUCTION TO TRIGONOMETRY

1. If 5 tan θ =4 ,find the value of $\frac{5\sin\theta - 3\cos\theta}{5\sin\theta + 2\cos\theta}$

2. If $\sqrt{3}$ tan θ=3 sin θ , then prove that $\sin^2\theta - \cos^2\theta = 1/3$

3. Given that Sin(A+B)= Sin A Cos B +Cos A Sin B, find the value of 75 $^\circ$

4. In Δ ABC, right angled at B, AB= 5 cm and <ACB= 30° , find BC and AC

5.Find the value of x such that $2\ \text{Cosec}^2 30° + x\ \text{Sin}^2 60° - \frac{3}{4}\tan^2 30° = 10$

6.Without using trigonometric tables , prove that

$$\tan 1° \tan 11° \tan 21° \tan 69° \tan 79° \tan 89° = 1$$

7. If Sin (2A + 45°)=Cos (30° -A), then find A

8. Find the value of k , if $\frac{\text{Cos } 20°}{\text{Sin } 70°} + \frac{2\text{Cos }\theta}{\text{Sin }(90-\theta)} = \frac{k}{2}$

9 .Evaluate: $\frac{2Sin\ 68°}{Cos\ 22°} - \frac{2\ Cot\ 15°}{5\tan 75°} - \frac{3\tan 45° \tan 20° \tan 40° \tan 50° \tan 70°}{5}$

10. If $\text{Sin }\theta + \text{Sin}^2\theta = 1$, then find the value of $\text{Cos}^2\theta + \text{Cos}^4\theta$

11. If A, B and C are the interior angles of ΔABC, then prove that tan (A+B) =Cot C/2

12. If m Sin θ + n Cos θ =p and m Cos θ –n Sin θ =q, then prove that $m^2 + n^2 = p^2 + q^2$

13.If Cos θ –Sin θ =$\sqrt{2}$ Sin θ ,then prove that Cos θ +Sin θ = =$\sqrt{2}$ Cos θ

14. If a Cos θ –b Sin θ =c,prove that (a Sin θ +b cos θ)=$\pm\sqrt{a2 + b2 - c2}$

15. If $\text{Sec}^2\theta$ (1+Sin θ) (1-Sin θ)= k, find the value of k

16.If Sin θ =1/3,then find the value of $(2\cot^2\theta + 2)$

17.If tan θ = Cot (30°+ θ), then find the value of θ

18.Prove that $a^2 + b^2 = x^2 + y^2$ when a Cos θ –b Sin θ = x and a Sin θ + b Cos θ = y

19. Prove that $\frac{Cosec\ A}{Cosec\ A-1}+\frac{Cosec\ A}{Cosec\ A+1}=2+2\tan^2 A$

20.Prove that $\frac{1}{\sec x-\tan x}-\frac{1}{\cos x}=\frac{1}{\cos x}-\frac{1}{\sec x+\tan x}$

21. If tan θ + Sin θ =m , prove that $\text{Sin}\ \theta=\frac{p2-1}{p2+1}$

22. If $\frac{\text{Cos}\ \propto}{\text{Cos}\ \beta}$ = m and $\frac{\text{Cos}\ \propto}{\text{Sin}\beta}$ = n, show that $(m^2+n^2)\ \text{Cos}^2\ \beta=n^2$

23.If 6 x = Sec θ and $\frac{6}{x}$ = tan θ ,find the value of $9\ (x^2-\frac{1}{x\ 2})$

24.Evaluate: $\frac{\tan^2 60°+4\sin^2 45°+3\sec^2 30°+5\cos^2 90°}{\text{Cosec}\ 30°+\sec 60°-\cot^2 30°}$

25.Prove that $\tan^2 A-\tan^2 B=\frac{\sin^2 A-\sin^2 B}{\cos^2 A\cos^2 B}$

26. Prove that $\frac{\cot A-\cos A}{\cot A+\cos A}=\frac{cosec\ A-1}{cosec\ A+1}$

27. If $\cot A+\frac{1}{\cot A}$ =2 , then prove that cot 2 A + 1/ cot ^{2} A=2

28.Given A= 30 ° verify sin 2 A = 2 sin A cos A

29.Prove that $\frac{1+\cos A}{\sin A}+\frac{\sin A}{1+\cos A}$ = 2 cosec A

30.Prove that (sin θ – cosec θ) (cos θ – sec θ) = $\frac{1}{\tan\theta+\cot\theta}$

31.If cot θ) =15/8, then evaluate: $\frac{(2+2\sin\theta)(1-\sin\theta))}{(1+\cos\theta)\ (2-2\cos\theta)}$

32.If tan A= $\sqrt{2}-1$, show that $\frac{\tan A}{1+\tan^2 A}=\sqrt{2}/4$

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Chapter 6 – TRIANGLES (Worksheet)

1. In ΔABC, DE || AB. If AD = 2x, CD = x+3, BE = 2x -1, CE = x, find the value of x

2. $\Delta ABC \sim \Delta PQR$, perimeter of ΔABC = 32cm, perimeter of ΔPQR = 48cm, PR = 6CM, find AC?

3. In an equilateral triangle of side 24cm, find the length of the altitude?

4. ΔABC is a right triangle, right angled at C. If BC = a, CA = b, AB = c and p is the length of perpendicular from C to AB, then prove that cp = ab.

5. If in ΔABC, AD is median and AE perpendicular to BC, then prove that $AB^2+AC^2 = 2AD^2 + \frac{1}{2} BC^2$.

6. In rhombus ABCD, prove that $4AB^2 = AC^2 + BD^2$

7. In the right ΔABC, right angled at C, B is a point on AC such that AB+AD = BC+CD. If AB= x,BC = h,

   CD = d, then find x (in terms of h and d).

8. In ΔABC, AD is perpendicular to BC and point D lies on BC such that 2.DB= 3.CD. Prove that

   $5.AB^2 = 5AC^2 + BC^2$.

9. If ΔABC, is an obtuse triangle , obtuse angled at B and if AD is perpendicular to CB,

   prove that , $AC^2 = AB^2+BC^2+2BC \times BD$.

10. In right ΔABC ,right angled at C ,and AC = $\sqrt{3}$ BC, prove that $\angle ABC = 60^0$.

11. In ΔABC, AB ll LM, AL= x-3, AC = 2x , BM= x-2, BC = 2x+3, find the value of x?

12. If a vertical stick ,20m long ,casts a shadow 10m long on the ground. At the same time , a tower casts a shadow 50m long on ground. Find the height of the tower?

13. A man goes 15m due west and then 8m due north. Find the distance travelled by him from starting point.

14. If the 3 sides of a triangle are a, $\sqrt{3}$ a, 2a, then find the measure of angle opposite to the longest side?

15. In ΔABC, if BC = 3cm, AC = 5cm, and D is the midpoint of AB, $\angle B = 90^0$, find value of DC?

16. A ladder is placed against a wall such that its foot is at a distance of 2.5m from the wall and its top reaches a window 6m above the ground. Find the length of the ladder?

17. O is any point inside a rectangle ABCD, Prove that $OB^2+ OD^2= OA^2+OC^2$.

18. In ΔABC, AD is perpendicular to BC, prove that $AB^2+CD^2 = BD^2+ AC^2$.