OXFORD INTERNATIONAL PUBLIC SCHOOL

(An English Medium Co-Educational Sr. Secondary School. Affiliated to CBSE Delhi) Affl.No. 1730347

Worksheet (Maths) **Class-10th**

Q.1. Show that one and only one out of n, n+2, n+4 is divisible by 3, where (n) is any positive integer.

Q.2. If the HCF of 210 and 55 is expressible in the form 210×5+55y, find (y).

Q.3. Find the largest num. which divides 615 and 963 leaving remainder 6 in each case.

Q.4. Explain why 3×5×7+7 is a composite number.

Q.5. Find the greatest number of 6 digits exactly divisible by 24, 15, 36.

Q.6. Prove that $\sqrt{2}+\sqrt{5}$ is irrational.

Q.7. Write down the decimal expansions of the following rational num. by writing their denominators in the form $2^m \times 5^m$.

(i) $\frac{3}{8}$ (ii) $\frac{13}{125}$ (iii) $\frac{14588}{625}$

Q.8. Find the zeroes of the quadratic polynomial $f(x)= abx^2+(b^2-ac)x-bc$, and verify the relationship between the zeroes and its coefficients?

Q.9. if $\propto, \beta$ are the zeroes of the polynomials $f(x)= 2x^2+5x+k$ satisfying the relation $\propto^2+\beta^2+\propto\beta = \frac{21}{4}$, then find the value of (k) for this to be possible.

Q.10. Find the zeroes of each of the following quadratic polynomial and verify the relationship between the zeroes and their coefficients.

(i) $\sqrt{3}x^2+10x+7\sqrt{3}$ (ii) $y^2+\frac{3\sqrt{5}}{2}y-5$

Q.11. If and $\propto$ are β zeroes of the quadratic polynomial $f(x)= x^2-px+q$ prove that $\frac{\propto^2}{\beta^2}+\frac{\beta^2}{\propto^2} = \frac{p^4}{q^2}-\frac{4p^2}{q}+2$

Q.12. If the zeroes of the polynomial $f(x)= x^3-3x^2+x+1$ are a-b, a, a+b, find (a) and (b).

Q.13. If two zeroes of the polynomial $f(x)= x^4-6x^3-26x^2+138x-35$ are $2\pm\sqrt{3}$ find others zeroes.

Q.14. What must be added to the poly $f(x)= x^4+2x^3-2x^2+x-1$ so that the resulting polynomial is exactly divisible by x^2+2x-3?

Q.15. use a single graph paper and draw the graph of the following equations. $2y-x=8$; $5y-x=14$, $y-2x=1$

Q.16. Solve $152x-378y = -74$
$-378x+152y = -604$

Q.17. Solve $ax+by = a-b$; $bx-ay = a+b$ by cross multiplications.

Q.18. Determine the value of (k) so that the following linear equations have no solutions $(3k+1)x+3y-2 = 0$, $(k^2+1)x+(k-2)y-5 = 0$

Q.19. Ved travels 600 km to his home partly by train and partly by car. He takes 8hours if he travels 120km. by train and the rest by car. He takes 20minute longer if he travels 200km. by train and the rest by car. Find the speed of the train and the car.

Q.20. A train covered a certain distance at a uniform speed. If the train would have been 6km/h faster. It would have taken 4 hours less than the scheduled time and if the train were slower by (6) km/h. It would have taken 6 hours more than the scheduled time. Find the length of the journey.

Q.21. If one root of the quadratic equation $2x^2+kx-6 = 0$ is 2, find the value of (k) also find the other root.

Q.22. Solve the quadrate quadratic by middle term splitting, completing square, and quadratic formals.
$9x^2-3x-2 = 0$

Q.23. Solve the following Q.E

(i) $\frac{4}{x}-3 = \frac{5}{2x+3}$, $x\neq0, \frac{-3}{2}$

(ii) $\frac{2x}{x-3}+\frac{1}{2x+3}+\frac{3x+9}{(x-3)(2x+3)} = 0$, $x \neq 3, \frac{-3}{2}$

(iii) $\frac{1}{a+b+x}-\frac{1}{x} = \frac{1}{a}+\frac{1}{b}+\frac{1}{x}$, $a+b \neq 0$

Q.24. using quadratic formula solve the following quadratic equations.

(i) $p^2x^2+(p^2-q^2)x-q^2 = 0$, $p \neq 0$ (ii) $9x^2-9(a+b)x+(2a^2+5ab+2b^2) = 0$

Q.25. Find the values of (k) for which the following equation has equal roots $(k-12)x^2+2(k-12)x+2=0$

Q.26. If the equations $(1+m^2)x^2+2mcx+(c^2-a^2)=0$ has equal roots, prove that $c^2=a^2(1+m^2)$

Q.27. A fast train takes 3 hours less than a slow train for a journey of 600km if the speed of the slow train is 10km/h less than that of the fast train, find the speeds of the two trains.

Q.28. One fourth of a herd of camels was seen in the forest. Twice the square root of the herd had gone to mountain and the remaining 15 camels were seen on the bank of a river. Find the total num. of camels.

Q.29. Find the middle term of the AP.
6, 13, 20……216

Q.30. Which term of the arithmetic progression 5, 15, 25…… will be 130 more than its 31^{st} terms?

Q.31. The sum of 5^{th} & 9^{th} terms of an A.P, is 72 and the sum of 7^{th} & 12^{th} term is 97 find the A.P.

Q.32. If the m^{th} term of an A.P be 1/n and n^{th} term be 1/m then show that its $(mn)^{th}$ term is 1.

Q.33. Divide 32 into four parts which are in A.P. such that the product of extremes is to the product of means is 7:15.

Q.34. Find the sum of all three digit natural numbers, which are divisible by 7.

Q.35. In An A.P the sum of first n terms is $\frac{3n^2}{2}+\frac{5n}{2}$. Find its 25^{th} term.

Q.36. The sum of the third and seventh term of an A.P is 6 and their product is 8. Find the sum of first sixteen terms of the A.P.

Q.37. The ratio of the sums of m and n terms of an A.P is $m^2:n^2$ show that the ratio of n^{th} and m^{th} terms is (2m-1) : (2n-1)

Q.38. Find the probability that a leap year selected at random will contain 53 Sundays.

Q.39. A die is thrown. Find the probability of getting:

(i) A prime number (ii) 2 or 4

(iii) A multiple of 2 or 3 (iv) An even prime number

(v) A number greater than 5 (vi) A number lying b/w 2 and 6.

Q.40. One card is drawn from a well shuffled deck of 52 cards. Find the probability of getting:

(i) A king of Red suit (ii) A face card

(iii) A Red face card (iv) A queen of black suit

(v) A jack of hearts (vi) A spade