



*THE LAWRENCE SCHOOL, LOVEDALE*  
**Subject Enrichment Activity–MAY-2019**  
**MATHEMATICS - CLASS 10**

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1. Find the zeroes of the quadratic polynomial  $x^2 - 7x + 12$
2. If  $(x+a)$  is a factor of  $2x^2 + 2ax + 5x + 10$ , Find the value of  $a$
3. Write a rational number between  $\sqrt{2}$  and  $\sqrt{3}$
4. Is  $x = -2$  a solution the equation  $x^2 - 2x + 8 = 0$  ?
5. Without actually performing the long division, state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion  
$$\frac{129}{2^2 5^7 7^5}$$
6. Find the HCF and LCM of 6, 72, and 120 Using the prime factorization method.
7. Prove that  $\sqrt{3}$  is irrational.
8. Find a quadratic polynomial, the sum and product of whose zeroes are -3 and 2 respectively.
9. Solve the pair of linear equations by the substitution method  
$$x - y = 3, \quad \frac{x}{3} + \frac{y}{2} = 6$$
10. Check whether  $x^2 - 3$  is a factor of  $2x^4 + 3x^3 - 2x^2 - 9x - 12$  or not
11. A fraction becomes  $\frac{9}{11}$ , if 2 is added to both the numerator and the denominator. If 3 is added to both the numerator and the denominator it becomes  $\frac{5}{6}$ , Find the fraction.

12. Given that  $\text{HCF}(306,657) = 9$ , find the  $\text{LCM}(306,657)$ .
13. Find a quadratic polynomial, the sum of whose zeroes is 0 and one zero is 5
14. Draw the graphs of  $2x+y=6$  and  $2x-y+2=0$ . Shade the region bounded by these lines and x axis. Find the area of the shaded region.
15. solve  $\frac{2}{x} + \frac{2}{3y} = \frac{1}{6}$ ,  $\frac{3}{x} + \frac{2}{y} = 0$ , and hence find 'a' for which  $y=ax-4$ .
16. solve  $3(2u+v)=7uv, 3(u+3v)=11uv$
17. solve  $\frac{5}{x+y} - \frac{2}{x-y} = -1, \frac{15}{x+y} + \frac{7}{x-y} = 10$
18. Determine the value of k for which the given system of equations has infinitely many solution  $(k-3)x + 3y = k, \quad kx + ky = 12$
19. Solve the system of linear equations graphically  
 $2x-y-4=0, \quad x+y+1=0$ . Also find the points where the lines meet Y axis
20. Solve the following system of equations:  
 $\frac{44}{x+y} + \frac{30}{x-y} = 10, \quad \frac{55}{x+y} + \frac{40}{x-y} = 13$
21. Solve the following system of linear equations for x and y :  
 $\frac{x}{a} + \frac{y}{b} = a+b, \quad \frac{x}{a^2} + \frac{y}{b^2} = 2$
22. Solve the following system of linear equations for x and y :  
 $ax + by = 2ab, \quad bx + ay = a^2 + b^2$
23. Solve the following system of equations:  
 $\frac{9}{x+1} - \frac{8}{y-1} = 1, \quad \frac{3}{x+1} + \frac{4}{y-1} = 2, \quad x \neq -1, y \neq 1$
24. Solve the following system of linear equations graphically :  
 $3x+y-12=0, \quad x-3y+6=0$ . Also find the coordinates of the points where the lines meet the x axis .
25. Prove that any positive odd integer is of the form  $4q+1$  or  $4q+3$  Where q is some integer.

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