



THE LAWRENCE SCHOOL, LOVEDALE

Subject Enrichment Activity–MAY-2019

MATHEMATICS - CLASS 9

01. Write FIVE irrational numbers between $\sqrt{2}$ and $\sqrt{3}$.
02. Write in ascending order: $\sqrt{2}$, $\sqrt[3]{3}$, $\sqrt[4]{4}$.
03. Write in fractional form: a) $0.32\bar{5}$ b) $3.1\bar{23}$.
04. Represent $\sqrt{2}$, $\sqrt{7}$, $\sqrt{10}$ and $\sqrt{17}$ on the number lines.
05. Find the value of: $\sqrt[4]{(81)^{-2}}$.
06. Represent: $\sqrt{7.7}$ and $\sqrt{8.3}$ on the number lines.
07. Find 'b' if $\frac{\sqrt{2}+\sqrt{3}}{3\sqrt{2}-2\sqrt{3}} = 2 - b\sqrt{6}$.
08. Simplify: $\frac{8^{\frac{1}{3}} \times 16^{\frac{1}{3}}}{32^{\frac{-1}{3}}}$
09. If $\sqrt{2} = 1.414$ and $\sqrt{3} = 1.732$, then find the value of $\frac{4}{3\sqrt{3}-2\sqrt{2}} + \frac{3}{3\sqrt{3}+2\sqrt{2}}$.
10. Express $0.6 + 0.\bar{7} + 0.4\bar{7}$ in the form $\frac{p}{q}$, where p and q are integers and $q \neq 0$.
11. Find the remainder when $x^{51} + 51$ is divided by $(x+1)$.
12. Show that $(2x-3)$ is a factor of $x+2x^3-9x^2+12$.
13. For what value of 'm' is $x^3 - 2mx^2 + 16$ divisible by $x+2$.
14. If $(x+2a)$ is a factor of $x^5 - 4a^2x^3 + 2x + 2a + 3$, find 'a'.
15. Factorize: a) $2x^3 - 3x^2 - 17x + 30$ b) $x^3 - 6x^2 + 11x - 6$ c) $3x^3 - x^2 - 3x + 1$
16. Expand: a) $\left(4 - \frac{1}{3x}\right)^3$ b) $\left(\frac{1}{x} + \frac{y}{3}\right)^3$.
17. If a, b, c are all non zero and $a + b + c = 0$, prove that $\frac{a^2}{bc} + \frac{b^2}{ca} + \frac{c^2}{ab} = 3$.

18. Plot the following points and write the name of the figure obtained by joining them in order: P(-3,2), Q(-7,-3),R(6,-3),S(2,2).
19. Plot the following points and check whether they are collinear or not : (1,3), (-1,-1), (-2,-3).
20. Draw the line $2x+3y=12$ on a Cartesian plane.
21. Show that the points A (1,2), B(-1,-16) and (0,-7) lie on the graph of the linear equation $y=9x-7$.
22. Draw the graph of the linear equation $3x+4y=6$. At what points, the graph cuts the X-axis and Y-axis. And shade the triangle formed with the line and the coordinate axes.

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