16.08.19   EVERWIN MATRIC.HR.SEC.SCHOOL
Std: X   MATERIAL OF THE MONTH
            MATHS   AUGUST

1. Distance between two points $A(x_1, y_1)$ and B $(x_2 y_2)$ is |AB|=d= $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)}$

2. The midpoint M, of the line segment joining $A(x_1, y_1)$ and $B(x_2, y_2)$ is $\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$

3. Let $A(x_1, y_1)$ and $B(x_2, y_2)$ be two distinct points such that point P (x, y) divides AB internally in the ratio m:n, then the coordinates of P is given by $\left(\frac{mx_2+nx_1}{m+n}, \frac{my_2+ny_1}{m+n}\right)$

4. Let $A(x_1, y_1)$ and $B(x_2, y_2)$ be two distinct points such that the point P(x,y) divides AB externally in the ratio m:n, then the coordinates of P is given by $\left(\frac{mx_2-nx_1}{m-n}, \frac{my_2-ny_1}{m-n}\right)$.

5. The coordinates of the centroid (G) of a triangle with vertices $A(x_1, y_1)$, $B(x_2, y_2)$ & C (x_3, y_3) are given by $\left(\frac{x_1+x_2+x_3}{3}, \frac{y_1+y_2+y_3}{3}\right)$

6. The area of ΔABC is the absolute value of expression = $\frac{1}{2}\left(x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)\right)$ sq. units.

7. If A (x_1, y_1), B (x_2, y_2) and $C(x_3, y_3)$ are collinear points, then area of ΔABC=0

8. If A (x_1, y_1), B (x_2, y_2), C (x_3, y_3) and D (x_4, y_4) be the vertices of a quadrilateral ABCD, then area of quadrilateral ABCD = (Area of ΔABD+area of ΔBCD) sq.units.

9. Area of the quadrilateral ABCD = $\frac{1}{2}\left((x_1y_2 + x_2y_3 + x_3y_4 + x_4y_1) - (x_2y_1 + x_3y_2 + x_4y_3 + x_1y_4)\right)$ sq. units

10. The angle of inclination of a line is the angle which a straight line makes with positive direction of X-axis measured in counter - clockwise direction to the part of the line above the X-axis.

11. The inclination of x-axis and everyline parallel to x-axis is 0°.

12. The inclination y-axis and everline parallel to y-axis is 90°.

13. The slope of a vertical line is undefined.

14. The measure of steepness is called slope or gradient.

15. Slope comprises of two factors namely steepness and direction.

16. If θ-is the angle of inclination of a non vertical straight line, then $\tan\theta$ is called the slope or gradient of the line and is denoted by m.

17. The slope of the straight line is m=$\tan\theta$, $0\le \theta \le 180°$, $\theta \ne 90°$.

18. Slope m=$\tan\theta = \frac{\text{Opposite side}}{\text{Adjacent side}}$

19. Slope m= $\frac{\text{Change in y Coordinate}}{\text{Changes in x Coordinate}}$

20. The line is parallel to the positive direction of x-axis, then $\theta=0°$

21. The line has positive slope rises from left to right, then $0<\theta<90°$

22. If $90°<\theta<180°$, then the line has negative slope falls from left to right.

23. If $\theta=180°$, then the line is parallel to the negative direction of x-axis.

24. $\theta=90°$, then the slope is undefined.

25. Two non-vertical lines are parallel if and only if their slopes are equal.

26. Two non-vertical lines with slopes m_1 and m_2 are perpendicular if and only if m_1m_2=-1.

27. If l_1 and l_2 are parallel if and only if $m_1=m_2$.

28. If the slopes of both the pairs of opposite sides are equal, then the quadrilateral is a parallelogram.

29. In any triangle, exterior angle is equal to sum of the opposite interior angles.

30. If $A(x_1, y_1)$, B (x_2, y_2) are two distinct points then the slope of AB is $\frac{y_2-y_1}{x_2-x_1}$

31. a) Slope of line ax+by+c=0 is m=$\frac{-a}{b}$

    b) Equation of x axis is y=0; c) Equation of y axis is x=0

32. Equation of straight line parallel to x-axis is y=b.

33. Equation of straight line parallel to y-axis is $\underline{x=C}$

34. In y=b, if b>O, then the line y=b lies above the x-axis

35. If b<0, then the line y=b lies below the x-axis

36. If b=0, then the line y=b is the $\underline{\text{x-axis}}$ itself.

37. In $x = c$, if C>O then the line $x=C$ lies right to the side of the y axis.

38. If C<O, then the line $x=C$ lies $\underline{\text{left}}$ to the side of the y axis.

39. If C=O, then the line $x=C$ is the $\underline{\text{y-axis itself}}$.

40. The slope-intercept form of the equation of a line is $\underline{y=mx+c}$

41. If a line with slope m, m≠O makes x intercept d, then the equation of the straight line is $\underline{y=m(x-d)}$.

42. Equation of a straight line passing through the origin is $\underline{y=mx}$.

43. X-Coordinate is also called as $\underline{\text{Abscissae.}}$

44. y-Coordinate is called as $\underline{\text{ordinate}}$.

45. Equation of the line in two-point form is $\dfrac{y-y_1}{y_2-y_1} = \dfrac{x-x_1}{x_2-x_1}$

46. Galileo and Newton used Coordinate geometry to characterize the motions of objects in plane and space.

47. Intercept form of a line is $\dfrac{x}{a}+\dfrac{y}{b}=1$.

48. General form of a straight line in two variable is $ax+by+c=0$, a,b≠0.

49. The equation of all lines parallel to the line $ax + by + c = 0$ is $\underline{ax+by+k=O}$

50. The equation of all lines perpendicular to the line $ax + by + c = 0$ is $\underline{bx-ay+k=0}$

51. Apollonius is hailed as the $\underline{\text{Great Geometer}}$.

52. Coordinate geometry is also called $\underline{\text{Analytical Geometry.}}$

53. Two straight lines $a_1x+b_1y + c_1=0$ and $a_2x + b_2y + c_2 = 0$ where the coefficients are non-zero, are parallel if and only if $\dfrac{a_1}{a_2} = \dfrac{b_1}{b_2}$, that is $\underline{a_1b_2-a_2b_1=0}$.

54. Two straight lines $a_1x + b_1y + c_1 =0$ and $a_2x + b_2y + c_2=0$ where the coefficients are non zero are perpendicular if and only if $\underline{a_1a_2+b_1b_2=0}$.