Delhi Public School Guwahati

"Under the aegis of the Delhi Public School Society, Delhi"

SESSION:2021-22

CLASS X

Cycle 5A

16th August 2021 to 31st August 2021

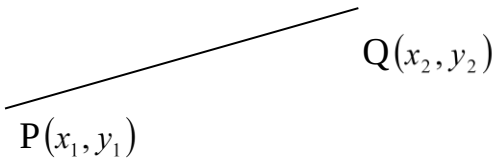
Ch.7 Coordinate Geometry and Ch.15 Probability

BULLET POINTS:

Ch.7 Coordinate Geometry

Distance formula :

Distance between two points $P(x_1, y_1)$ and $Q(x_2, y_2)$ is given by $PQ = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$.

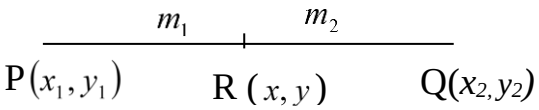


Distance of a point from origin :

Distance of a point P(x, y) from the origin O(0,0) is given by $\sqrt{x^2 + y^2}$.

Section formula :

The coordinates of the point R (x, y) which divides the line segment joining the points $P(x_1, y_1)$ and $Q(x_2, y_2)$ internally in the ratio $m_1 : m_2$ are



$$\left(\frac{m_1x_2 + m_2x_1}{m_1 + m_2}, \frac{m_1y_2 + m_2y_1}{m_1 + m_2}\right).$$

Mid - point formula :

The mid-point of the line segment joining the points $P(x_1, y_1)$ and $Q(x_2, y_2)$ is $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$.

Coordinates of the centroid of a triangle :

The coordinates of the centroid of a triangle, whose vertices are $P(x_1, y_1)$, $Q(x_2, y_2)$ and R (x_3, y_3) are

$$\left(\frac{x_1 + x_2 + x_3}{3}, \frac{y_1 + y_2 + y_3}{3}\right).$$

Ch.15 Probability

Probability: Probability is a measure of uncertainty (an event may happen or may not happen).

Random experiment: Random experiment is an activity, which when repeated under identical conditions may not give the same result.

Sample space : All the possible results (outcomes) of a random experiment is called sample space.

Elementary event : An event having only one outcome is called elementary event.

*The theoretical (classical) probability of an event E, written as P (E), is defined as

$$P(E) = \frac{\text{Number of outcomes favorable to } E}{\text{Number of all possible outcomes of the experiment}}$$

*The probability of a sure event is 1 (one).

*The probability of an impossible event is 0 (zero).

*The probability of an event E is a number P(E) such that $0 \leq P(E) \leq 1$.

*For any event E, P(E) + P ($\overline{E}$)= 1, where $\overline{E}$ stands for 'not E '.

E and $\overline{E}$ are called complementary events.

ONLINE LINK: https://www.youtube.com/watch?v=KowWdT5IcaQ

Period	Explanation
Period 1	CW: Recapitulation of concept of abscissa and ordinate Explanation of Distance Formula Discussion of example : 4
Period 2	CW: Ex. 7.1 Q. Nos. 1 (i), (iii), 3, 6 (i) , (iii) HW : Ex. 7.1 Qn Nos. 1 (ii), 2, 4,5
Period 3	CW : Ex. 7.1 Q Nos. 7, 8, 10 HW Ex 7.1 Q No. 9 Q. Show that the points A (5,6), B (1,5), C (2,1) and D (6,2) are the vertices of a square.
Period 4	CW: Explanation Section Formula CW: Ex: 7.2 Q. Nos. 1, 2, 5, 7 HW: Ex: 7.2 Q. Nos. 3, 4, 6
Period 5	CW: Ex: 7.2 Q. Nos. 8, 9, 10 HW: (1) If *A(6, 4) , B(5, -2)* and *C(7, -2)* are the vertices of a triangle ABC, find the length of

	median through the point *A.* (2)If the mid-point of the line segment joining the points *A (3, 4)* and *B (k, 6)* is *P (x, y)* and *x + y – 10 = 0,* find the value of *k* (3) Point P divides the line segment joining the points A (2, 1) and B(5, -8) such that $\frac{AP}{PB} = \frac{1}{3}$. If P lies on the line $2x - y + k = 0$ find the value of k.
Period 6	CW: Ex: 7.4 Q. Nos. 1, 2, 6 HW: Ex: 7.4 Q. Nos. 3, 4, 5
Period 7	CW: Explanation of the Concept probability and various terms related to it.
Period 8	CW: Ex: 15.1 Q Nos. 1, 3, 5, 7, 9 HW: Ex: 15.1 Q Nos. 2, 4, 6, 8
Period 9	CW: Ex: 15.1 Q Nos. 10, 13, 14, 15, 17, 18 HW: Ex: 15.1 Q Nos. 11, 12, 16, 19
Period 10	CW: Ex: 15.1 Q Nos. 21, 23, 24, 15, HW: Ex: 15.1 Q Nos. 20, 22,
Period 11	CW: Ex: 15.2 Q Nos. 1,3,4,5 HW: A box contains 19 balls bearing numbers 1, 2, 3, ...,19. A ball is drawn at random from the box. What is the probability that the number of the ball is (i) a prime number (ii) divisible by 3 or 5 (iii) neither divisible by 5 nor by 10 (iv) an even number ?
Period 12	Revision for PT-II
Period 13	Revision for PT-II

Source: NCERT and Suggested Reference Books.

Practice Questions:

1. If the mid-point of the line segment joining the points A (3, 4) and B (*k*, 6) is P (*x*, *y*) and *x* + *y* – 10 = 0, find the value of k.

2. Name the type of triangle PQR formed by the points P(2, 2) , Q (– 2, – 2) and R(– 6, 6) .

3. If P (9a – 2, –b) divides line segment joining A (3a + 1, –3) and B (8a, 5) in the ratio 3 : 1, find the values of a and b.

4. The mid-points D, E, F of the sides of a triangle ABC are (3, 4), (8, 9) and (6, 7). Find the coordinates of the vertices of the triangle.

5. Find the ratio in which the line 2*x* + 3*y* – 5 = 0 divides the line segment joining the points (8, –9) and (2, 1). Also find the coordinates of the point of division.

6. Find the coordinates of the point Q on the *x*–axis which lies on the perpendicular bisector of the line segment joining the points A (–5, –2) and B(4, –2).
Name the type of triangle formed by the points Q, A and B.

7. Cards marked with the numbers 2 to 101 are placed in a box and mixed thoroughly. One card is drawn from this box. Find the probability that the number on the card is
(i) an even number (ii) a number less than 14
(iii) a number which is a perfect square (iv) a prime number less than 20.

8. A bag contains 12 balls out of which x are white.
(i) If one ball is drawn at random, what is the probability that it will be a white ball ?
(ii) If 6 more white ball are put in the bag, the probability of drawing a white ball will be double than that given in first case. Find x.