



SpeedLabs

MATHS

CBSE 11th

TEEVRA EDUTECH PVT. LTD.

Introduction to Three-Dimensional Geometry

Exercise- 12.1

1. A point is on the x-axis. What are its y-coordinates and z-coordinates?

Ans If a point is on the x-axis, then its y-coordinates and z-coordinates are zero.

2. A point is in the XZ-plane. What can you say about its y-coordinate?

Ans If a point is in the XZ plane, then its y-coordinate is zero.

3. Name the octants in which the following points lie:

$(1, 2, 3)$, $(4, -2, 3)$, $(4, -2, -5)$, $(4, 2, -5)$, $(-4, 2, -5)$, $(-4, 2, 5)$, $(-3, -1, 6)$, $(2, -4, -7)$

Ans The x-coordinate, y-coordinate, and z-coordinate of point $(1, 2, 3)$ are all positive. Therefore, this point lies in octant I. The x-coordinate, y-coordinate, and z-coordinate of point $(4, -2, 3)$ are positive, negative, and positive respectively. Therefore, this point lies in octant IV. The x-coordinate, y-coordinate, and z-coordinate of point $(4, -2, -5)$ are positive, negative, and negative respectively. Therefore, this point lies in octant VIII. The x-coordinate, y-coordinate, and z-coordinate of point $(4, 2, -5)$ are positive, positive, and negative respectively. Therefore, this point lies in octant V. The x-coordinate, y-coordinate, and z-coordinate of point $(-4, 2, -5)$ are negative, positive, and negative respectively. Therefore, this point lies in octant VI. The x-coordinate, y-coordinate, and z-coordinate of point $(-4, 2, 5)$ are negative, positive, and positive respectively. Therefore, this point lies in octant II. The x-coordinate, y-coordinate, and z-coordinate of point $(-3, -1, 6)$ are negative, negative, and positive respectively. Therefore, this point lies in octant III. The x-coordinate, y-coordinate, and z-coordinate of point $(2, -4, -7)$ are positive, negative, and negative respectively. Therefore, this point lies in octant VIII.

4. Fill in the blanks:

Ans (i) The x-axis and y-axis taken together determine a plane known as XY – plane .

(ii) The coordinates of points in the XY-plane are of the form $(x, y, 0)$.

(iii) Coordinate planes divide the space into eight octants.