1. A point is on the x-axis. What are its y coordinate and z-coordinates?
Solution:
If a point is on the x-axis, then the coordinates of y and z are 0.
So the point is (x, 0, 0).

2. A point is in the XZ-plane. What can you say about its *y*-coordinate?
Solution:
If a point is in XZ plane, then its y-co-ordinate is 0.

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).
Solution:
Here is the table which represents the octants:

Octants	I	II	III	IV	V	VI	VII	VIII
x	+	-	-	+	+	-	-	+
y	+	+	-	-	+	+	-	-
z	+	+	+	+	-	-	-	-

(i) (1, 2, 3)
Here x is positive, y is positive and z is positive.
So it lies in I octant.

(ii) (4, -2, 3)
Here x is positive, y is negative and z is positive.
So it lies in IV octant.

(iii) (4, -2, -5)
Here x is positive, y is negative and z is negative.
So it lies in VIII octant.

(iv) (4, 2, -5)
Here x is positive, y is positive and z is negative.
So it lies in V octant.

(v) (-4, 2, -5)

Here x is negative, y is positive and z is negative.
So it lies in VI octant.

(vi) (-4, 2, 5)
Here x is negative, y is positive and z is positive.
So it lies in II octant.

(vii) (-3, -1, 6)
Here x is negative, y is negative and z is positive.
So it lies in III octant.

(viii) (2, -4, -7)
Here x is positive, y is negative and z is negative.
So it lies in VIII octant.

4. Fill in the blanks:
(i) The x-axis and y-axis taken together determine a plane known as _____.
(ii) The coordinates of points in the XY-plane are of the form _____.
(iii) Coordinate planes divide the space into _____ octants.
Solution:
(i) The x-axis and y-axis taken together determine a plane known as <u>XY Plane</u>.

(ii) The coordinates of points in the XY-plane are of the form <u>(x, y, 0)</u>.

(iii) Coordinate planes divide the space into <u>eight</u> octants.